2017

Navajo County Multi-Jurisdictional Hazard Mitigation Plan

Navajo County Emergency Management and Preparedness

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This Plan was developed in cooperation with:

Navajo County

City of Holbrook

Town of Pinetop-Lakeside

City of Show Low

Town of Snowflake

Town of Taylor

City of Winslow

SECTION 1: INTRODUCTION

1.1 Purpose

This Plan was prepared to guide hazard mitigation to better protect the people, property, community assets and land from the effects of hazards. This Plan demonstrates the participants' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This Plan was also developed to make the participants eligible for certain types of Federal disaster assistance and hazard mitigation grant funding.

1.2 Background and Scope

Each year in the United States, disasters take the lives of hundreds and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spend on mitigation saves society an average of $4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2005).

Examples of hazard mitigation measures include, but are not limited to the following:

- Development of mitigation standards, regulations, policies, and programs
- Land use/zoning policies
- Strong building code and floodplain management regulations
- Dam safety program, seawalls, and levee systems
- Acquisition of flood prone and environmentally sensitive lands
- Retrofitting/hardening/elevating structures and critical facilities
- Relocation of structures, infrastructure, and facilities out of vulnerable areas
- Public awareness/education campaigns
- Improvement of warning and evacuation systems

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This Plan documents the planning process employed by the Planning Team. The Plan identifies relevant hazards and risks, and identifies the strategy that will be used to decrease vulnerability and increase resiliency and sustainability.

This Plan was prepared pursuant to the requirements of the Disaster Mitigation Action of 2000 and the implementing regulations set forth in the Federal Register (hereafter, these requirements will be referred to as the DMA2K). While the act emphasized the need for mitigation plans and coordinated mitigation planning and implementation efforts, the regulations established the requirements that hazard mitigation plans must meet in order to be eligible for certain Federal disaster assistance and hazard mitigation funding

under the Robert T. Stafford Disaster Relief and Emergency Act.

Information in this Plan will be used to help guide and coordinate mitigation activities and decisions for future land use. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the community and its property owners by protecting structures, reducing exposure and minimizing overall community impacts and disruption. The community has been affected by hazards in the past and is thus committed to reducing future disaster impacts and maintaining eligibility for Federal funding.

This is a multi-jurisdictional plan that geographically covers the communities within the Navajo County boundaries (hereinafter referred to as the Planning Area). The following communities participated in the planning process:

- Navajo County
- Holbrook
- Pinetop-Lakeside
- Show Low
- Snowflake
- Taylor
- Winslow

1.3 Assurances

This Plan was prepared to comply with the requirements of the Robert T Stafford Disaster Relief and Emergency Assistance Act of 1988 (as amended by the DMA); all pertinent presidential directives associated with the U.S. Department of Homeland Security and FEMA; all aspects of 44 CFR pertaining to hazard mitigation planning and grants pertaining to the mitigation of adverse effects of disasters; interim final rule and final rules issued by FEMA; and all Office of Management and Budget circulars and other federal government documents, guidelines and rules.

The participants of this Plan assure that they will continue to comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). This Plan will be amended whenever necessary to reflect changes in Federal laws and statutes as required in 44 CFR 133.11(d).

1.4 Plan Organization

This Plan is organized as follows:

- Section 1: Introduction
- Section 2: Community Overview
- Section 3: Planning Process
- Section 4: Risk Assessment
- Section 5: Mitigation Strategy
- Section 6: Plan Maintenance

SECTION 2: COMMUNITY OVERVIEWS

2.1 County

According to the Arizona Department of Commerce[1], Navajo County was formed on March 21, 1895, as the final act of the Territorial Assembly before it adjourned at midnight. What is now Navajo County was first included in Yavapai County, but in 1879, the area was added to the newly formed Apache County. Today, Navajo County covers 9,959 square miles, 55% of which is tribal reservation. The county seat is Holbrook. Navajo County is located in the northeastern portion of the State of Arizona.

Major roadway transportation routes through the county include Interstate 40, U.S. Highways 60, 160, and 163, State Routes 73, 77, 87, 99, 260, 264, 277, 377, and 564, and Indian Routes 6 and 15. Railways include the Burlington Northern Santa Fe Railway, Apache Railway and AMTRAK.

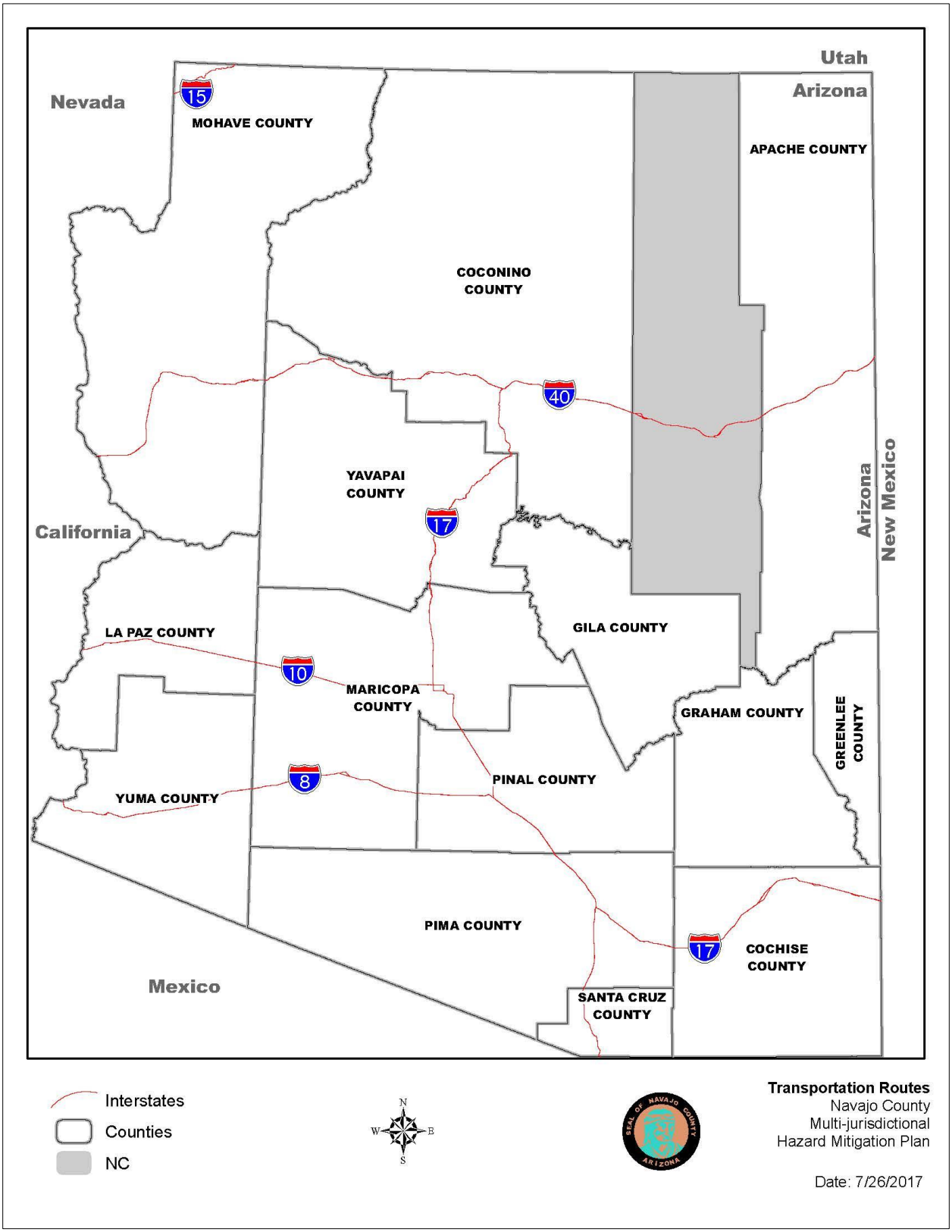
Navajo County is divided into two distinct parts by the Mogollon Rim. The high country in the northern part of the county is considered Colorado Plateau Shrublands and is characterized by arid, desert-like conditions with mesas and plateaus. The southern part is considered Arizona Mountain Forests and is characterized by rugged mountain area, heavily wooded with pinon, juniper and ponderosa pine.

The geographical characteristics of Navajo County have been mapped into two terrestrial ecoregions[2], which are described below:

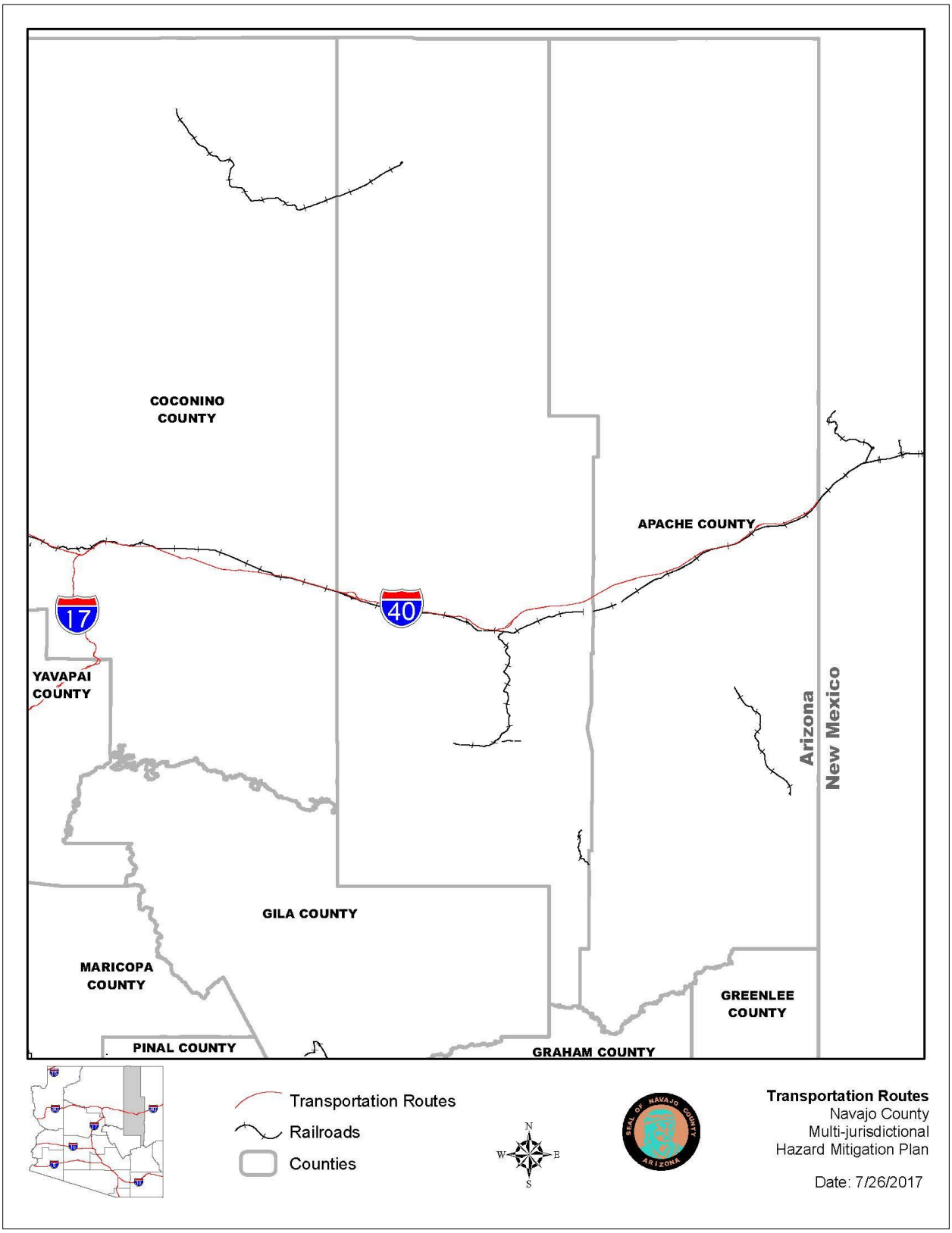
- **Arizona Mountain Forests** – this ecoregion contains a mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 6,000 to 7,100 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas is largely heavily wooded with pinon, juniper and ponderosa pine forests, high altitude grasses, shrubs, and brush.
- **Colorado Plateau Shrublands** – this ecoregion covers the northern portion of the county and makes up the majority of the county with elevations that average around 5,000 to 7,500 feet. Vegetation in this ecoregion is comprised mainly of Plains Grassland and Great Basin Desert scrub. Temperatures can vary widely in this zone, with comparatively warm summers and cold winters. The high country in the northern part of the county is arid and desert-like with mesas and plateaus.

[1] Arizona Department of Commerce, 2004, *Community Profile for Navajo County.*

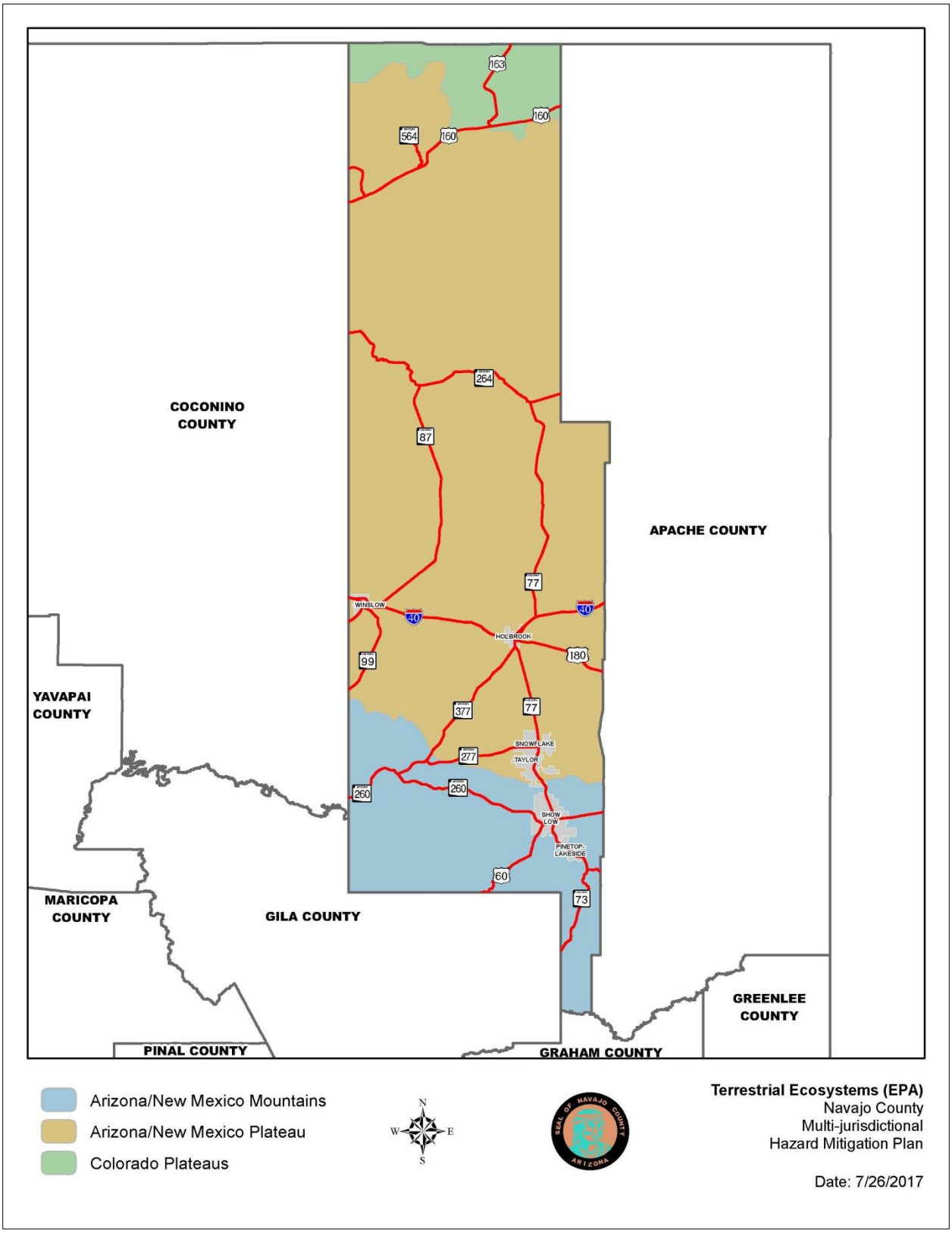
[2] *State of Arizona All Hazard Mitigation Plan, 2013*.



Map 2-1: Vicinity Map



Map 2-2: Transportation Routes



Map 2-3: Terrestrial Ecoregions

Climate

The majority of Navajo County can be classified as Colorado Plateau Shrubland and Arizona Mountain Forest. The elevation range for these two ecoregions in Navajo County is from approximately 5,000 to 7,500 feet. Climatic statistics for weather stations within Navajo County are produced by the Western Region Climate Center and span records dating back to the early 1900's

Precipitation throughout Navajo County is governed to a great extent by elevation and season of the year. From November through March, storm systems from the Pacific Ocean cross the state as broad winter storms producing mild precipitation events and snowstorms at the higher elevations. Summer rainfall begins early in July and usually lasts until mid-September. Moisture-bearing winds move into Arizona at the surface from the southwest (Gulf of California) and aloft from the southeast (Gulf of Mexico). The shift in wind direction, termed the North American Monsoon, produces summer rains in the form of thunderstorms that result largely from excessive heating of the land surface and the subsequent lifting of moisture-laden air, especially along the primary mountain ranges. Thus, the strongest thunderstorms are usually found in the mountainous regions of the central southeastern portions of Arizona. These thunderstorms are often accompanied by strong winds, blowing dust, and infrequent hail storms.

Table 2-1: Average Climate Based on Snowflake (5,642 ft elevation)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg Temp (F)	35.5	49.6	46.3	51.9	60.2	68.4	73.9	72.1	65.7	54.7	43.6	35.3
Total Precip (Inches)	0.77	0.73	0.80	0.45	0.39	0.31	2.17	2.28	1.48	0.96	0.81	0.97
Total Snowfall (Inches)	2.8	2.7	2.2	0.4	0.0	0.0	0.0	0.0	0.0	0.2	1.3	4.1

Source: NWS, Flagstaff

Table 2-2: Average Climate Based on Keams Canyon (6,205 ft elevation)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg Temp (F)	31.4	35.4	41.6	48.7	57.1	66.2	72.3	70.5	63.4	52.0	41.2	31.2
Total Precip (Inches)	0.66	0.70	0.74	0.53	0.41	0.21	1.37	1.59	1.11	0.92	0.59	0.87
Total Snowfall (Inches)	No Data Available											

Source: NWS, Flagstaff

Table 2-3: Average Climate Based on Betatakin (7,286 ft elevation)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg Temp (F)	3.08	33.8	40.2	47.6	57.6	67.5	72.2	69.9	63.3	51.7	39.7	31.1
Total Precip (Inches)	1.48	1.06	1.17	0.85	0.51	0.25	1.18	1.71	1.24	1.11	1.02	1.22
Total Snowfall (Inches)	11.0	7.7	6.3	3.8	0.8	0.0	0.0	0.0	0.0	0.3	4.5	9.0

Source: NWS, Flagstaff

Population

Navajo County is home to 107,449 residents, with the majority of the population living on the reservations and incorporated communities of Navajo County. All incorporated cities and towns are geographically located in the southern portion of the County. There are 46 unincorporated communities scattered across the county, with many being comprised of only one structure or a prominent landmark. The majority of these unincorporated communities is also located on the tribal reservations and will be addressed in separate tribal reservation hazard mitigation plans. Within Navajo County, the US Forest Service, US Bureau of Land Management, and State Land combined, constitute nearly 15% of land ownership. Tribal

land makes up over 66% of the county and the other 18% is held privately.

Table 2-4: Population Estimates for Navajo County

Jurisdiction	2010	2015	2020	2025	2030
Navajo County (total)	107,449	109,671	113,063	115,986	118,177
Cities and Towns					
Holbrook	5,053	5,094	5,277	5,414	5,517
Pinetop-Lakeside	4,282	4,370	4,614	4,860	5,053
Show Low	10,660	11,061	12,138	13,216	14,078
Snowflake	5,590	5,742	6,167	6,597	6,939
Taylor	4,112	4,208	4,558	4,918	5,204
Winslow	9,655	9,701	9,953	9,793	9,644
Reservation Lands					
Fort Apache	11,176	11,582	12,016	12,456	12,817
Hopi including off reservation trust land	6,040	6,242	6,449	6,658	6,827
Navajo including off reservation trust land	25,260	23,682	22,970	22,233	21,515
Unincorporated					
Unincorporated Non Tribal	25,621	27,988	28,920	29,840	30,584

https://population.az.gov/population-projections
Office of Economic Opportunity, 100 N. 15th Avenue, Phoenix, AZ 85007

Economy

Navajo County was formed on March 21, 1895, as the final act of the Territorial Assembly before it adjourned at midnight, with the County Seat established in Holbrook. By the time it became Navajo County, the area was developed. The railroad had crossed the County for more than a decade, and North America's third largest ranch, the Aztec Land and Cattle Company near Holbrook, had been established. Backed by Easterners, Aztec bought 1 million acres of land from the railroad at 50 cents an acre. The company, known as the Hashknife Outfit because of its brand, brought 33,000 longhorn cattle and 2,200 horses into northern Arizona from Texas. Holbrook, the county seat, was founded in 1871.

Economic diversity also characterizes Navajo county. The tribal reservations in the northern half of the county comprise one segment. Kayenta, founded in 1909 as a trading post, is now the gateway to the Navajo Tribal Park at Monument Valley and a thriving Navajo community. Members of the Hopi nation, which is completely surrounded by the Navajo Reservation, depend upon cattle and sheep production and tourism. The Hopi pueblo of Oraibi is one of the oldest continuously inhabited settlements in the United States.

The Interstate 40 corridor communities of Holbrook and Winslow in the county's center are areas of growth tied to the cross-country transportation route. The county's southern half is characterized by dynamic growth related to tourism and an increased demand for housing.

Major communities in the south are Pinetop-Lakeside, Show Low, Snowflake, and Taylor. Both central and southern portions of the county enjoy relatively low unemployment.

2.2 Holbrook

The City of Holbrook is located in the central portion of Navajo County in northeastern Arizona. Holbrook is one of six incorporated communities in Navajo County and serves as the County seat. The City is located on a high desert plateau with low sandstone cliffs. Holbrook is on the banks of the Little Colorado River and along Interstate 40. The present incorporated City limits occupy approximately 16.5 square miles.

The major roadway through the City is Interstate 40. State Routes 77, 377, and U.S. Highway 180 come together in a junction in the southern portion of the City. The Burlington Northern Santa Fe (BNSF) railroad parallels Interstate 40 and passes through the City. The City operates an airport within the City limits.

The Little Colorado River is the primary watercourse located within the City. Other major watercourses include the Puerco River, Leroux Wash, Porter Tank Draw, and Five Mile Wash. The remaining watercourses are primarily small ephemeral washes.

In 1881-82 railroad tracks were laid and a railroad station was built in the community. The community was then named Holbrook in honor of the first chief engineer of the Atlantic and Pacific Railroad. The railroad is now BNSF and Holbrook has since been a transportation hub and service center for northeast Arizona. Holbrook is also on Historic Route 66 and is the gateway city to the Petrified Forest National Park. A colorful cowboy history also helps to make Holbrook an interesting tourist community. Holbrook is the county seat of Navajo County.

2.3 Pinetop-Lakeside

The Town of Pinetop-Lakeside is located in the southern portion of Navajo County in east-central Arizona. Pinetop-Lakeside is one of six incorporated communities in Navajo County. The Town is located in the White Mountains of Arizona in the tall pines of the Apache Sitgreaves National Forest. State Route 260 (also referred to as White Mountain Boulevard) traverses directly through the middle of Pinetop-Lakeside. The City of Show Low shares Pinetop-Lakeside's northern boundary. The present incorporated Town limits occupy approximately 10.7 square miles.

The major roadway through the Town is State Route 260. State Route 260 intersects with State Route 77 (also referred to as Penrod and Porter Mountain Road; USFS Road 45; Penrod/Porter Mountain Road Extension) in the central portion of the Town. U.S. Highway 60 is in close proximity to the Town.

Four primary watercourses are located within the Town: Billy Creek, Porter Creek, Show Low Creek, and Walnut Creek. The remaining watercourses are primarily small ephemeral washes.

Pinetop-Lakeside incorporated in 1984 merging two communities Pinetop and Lakeside. Pinetop-Lakeside is known for its extensive tourism and recreational activities, proximity to the world's largest stand of Ponderosa pine, and for an outstanding quality of life. Hiking, biking and horseback riding are popular activities on the 200 miles of developed trails, which are part of the White Mountains Trail System. Cross-country skiing, sledding, snowmobiling and ice fishing can be enjoyed during the winter. Excellent downhill skiing is 45 minutes away at Sunrise Park Resort. Hunting and fishing are popular, and picnic and camping facilities available. [6]

The major industries significant to the economy of Pinetop-Lakeside include: Trade and Services geared toward the recreation opportunities within the Town and surrounding area, Navopache Electric Cooperative, Inc., Arizona Water Co., education, medical and light manufacturing, and Government Services.

[5] Arizona Department of Commerce, 2015, *Community Profile for Pinetop-Lakeside, Arizona.*

2.4 Show Low

The City of Show Low is located in the southern portion of Navajo County in northeastern Arizona. Show Low is one of six incorporated communities in Navajo County. The City is located on the edge of the White Mountains. Show Low is located on U.S. Route 60. The present incorporated City limits occupy approximately 34 square miles.

The major roadway through the City is U.S. Highway 60. State Routes 77 and 260 also traverse through the City. The City operates an airport within the City limits.

The City's primary perineal water course is Show Low Creek. Show Low creek feeds two reservoirs; Show Low Lake and Fools Hollow Lake.

The major industries significant to the economy of Show Low include: education, medical and light manufacturing, Government Services, and Retail Trade and Services. Tourism and recreation are the foundations of the economy of Show Low. Due to its size and location, the community serves as a regional trade and services center for southern Navajo County and portions of southern Apache County. It is also an entry point for visitors to the White Mountains.

Show Low was established in 1870 and incorporated in 1953. It received its name when C.E. Cooley and Marion Clark decided there was not enough room for both of them in their settlement. The two men agreed to let a game of cards decide who was to move. According to the story, Clark said "If you can show low, you win." Cooley turned up the deuce of clubs and replied, "Show Low it is."

2.5 Snowflake

The Town of Snowflake is located in the southern portion of Navajo County in east-central Arizona. Snowflake is one of six incorporated communities in Navajo County. The Town is located in a broad, flat valley on the banks of Silver Creek. Snowflake is located at the intersection of State Route 77 and State Route 277. The Town of Taylor shares Snowflake's southern boundary. The present incorporated Town limits occupy approximately 32.8 square miles.

The major roadway through the Town is State Route 77. State Routes 77, 277, and 5020 all intersect within the corporate boundaries of Snowflake.

Silver Creek is the primary watercourse located within the Town. Other major watercourses include Cottonwood Wash, The Canal, and Concho Flat Wash. The remaining watercourses are primarily small ephemeral washes. The Town of Snowflake is located completely within the Colorado Plateau Shrub lands zone.

Snowflake is in east central Arizona 30 miles south of Holbrook on State Route 77. The Mogollon Rim and the White Mountains, south and west of Snowflake, form an almost continuous barrier protecting the community from severe winters and creating a semi-arid climate. Founded in 1878, Snowflake was named after its founders, Erastus Snow, an apostle of the Church of Jesus Christ of Latter Day Saints and Mormon land agent William Flake. Snowflake is at an elevation of 5,600 feet.

Snowflake lies in an area of great contrast - barren desert to the north and mountain ranges to the south. One of the nation's most unique parks lies north of Snowflake, the Petrified Forest National Park, which includes not only the Petrified Forest, but the Painted Desert and Navajo Indian Reservation with attractions such as Monument Valley and Oraibi, the oldest continually occupied village in the U.S.

To the south and west of Snowflake are high mountains and forests, including the White Mountains, Sitgreaves National Forest, and the Mogollon Rim. Many small lakes, perfect for trout fishing and swimming, are scattered throughout these mountains. The Sunrise Park Ski Resort is located 65 miles south of Snowflake on the Fort Apache Indian Reservation.

The major industries significant to the economy of Snowflake include: significant livestock production (32,000 head of cattle have grazed annually in the county, many of them in the Snowflake/Taylor area), significant hog production (250,000 head annually), medical marijuana production, education, medical and light manufacturing, government services, and retail trade and services.

2.6 Taylor

The Town of Taylor is located in the southern portion of Navajo County in east-central Arizona. Taylor is one of six incorporated communities in Navajo County. The Town is located in a broad, flat valley on the banks of Silver Creek. Taylor is on State Route 77 just south of the intersection with State Route 277. The Town of Snowflake shares Taylor's northern boundary. The present incorporated Town limits occupy approximately 28 square miles.

The major roadway through the Town is State Route 77. State Route 918 intersects with State Route 77 at the southern end of the Town and State Route 277 intersects State Route 77 within the incorporated limits of the Town of Snowflake to the north. The Town operates an airport within the Town limits.

Silver Creek is the primary watercourse located within the Town. Other major watercourses include: Cottonwood Wash, Dodson Wash, and Show Low Creek. The remaining watercourses are primarily small ephemeral washes.

The Town of Taylor is located almost completely within the Colorado Plateau Shrub lands zone. Only a small portion of the southern boundary is touched by the Arizona Mountain Forests zone.

The major industries significant to the economy of Taylor include: livestock production, education, medical and light manufacturing, government services; and retail trade and services.

Taylor, on the banks of Silver Creek, is in a broad, flat valley in east-central Arizona. The Mogollon Rim and White Mountains, to the south and west, form an almost continuous barrier protecting Taylor from severe winters and creating a semi-arid climate. Taylor was settled by James Pearce and named after John Taylor, English-born president of the Church of Jesus Christ of Latter Day Saints. Taylor has seven sites listed on the National Register.

Taylor lies in an area of great contrasts – barren desert to the north and mountain ranges to the south. The Petrified Forest National Park is one of the nation's most unique parks. Within the Petrified Forest are the Painted Desert and Navajo Indian Reservation with such attractions as Monument Valley and Oraibi, the oldest continually occupied village in the U.S. To the south and west of Taylor are high mountains and forests, including the White Mountains, Sitgreaves National Forest, and the Mogollon Rim. Many small lakes, perfect for trout fishing and swimming, are scattered throughout these mountains. The Sunrise Park Ski Resort is located 65 miles south of Taylor on the Fort Apache Indian Reservation.

2.7 Winslow

The City of Winslow is located in the west-central portion of Navajo County in northeastern Arizona. Winslow is one of six incorporated communities in Navajo County. The City is located on the western edge of Navajo County. Winslow is on Interstate 40. The present incorporated City limits occupy approximately 12.2 square miles. The major roadway through the City is Interstate 40. State Routes 71, 87, and 99 also traverse through the City. Historic Route 66 also runs through the City. The City operates an airport within the City limits.

The City is located on the banks of the Little Colorado River, which serves as the City's primary watercourse. Other major watercourses within the vicinity of Winslow are Clear Creek, Cottonwood Wash, and Jacks Canyon. The remaining watercourses are primarily small ephemeral washes. The City is located completely within the Colorado Plateau Shrub lands zone.

The major industries significant to the economy of Winslow include: transportation, tourism, manufacturing, trade, retail, education, medical, government services, and lumber.

Winslow, which became a division point for the Santa Fe Railway, is on Interstate 40 on the western border of Navajo County in the high plateau country of northeastern Arizona. The community lies in the Little Colorado River Valley (the river skirts the city's eastern edge) and is 58 miles east of Flagstaff. Famed Route 66 was the major east-west route through Winslow before I-40 replaced it. The first settler, in 1880, was reputed to have been a hotel man who lived in and did business from a tent. Two years later, in January 1882, a U.S. Post Office was established. The City is said to have been named for Edward Winslow, a railroad company president.

SECTION 3: PLANNING PROCESS

3.1 Primary Point of Contacts

Table 3-1: Jurisdictional Points of Contact	
Jurisdiction	**Name/Title**
Navajo County	Catrina Jenkins Deputy Director, Emergency Management
City of Holbrook	Doyce Stuart Safety Officer
Town of Pinetop- Lakeside	Mary French-Jones, Contracts and Grants Administrator
City of Show Low	Bill Kopp Director, Engineering
Town of Snowflake	Larry Scarber Police Chief
Town of Taylor	Allen Davis Planning & Zoning Administrator
City of Winslow	Steve Pauken City Manager

3.2 Planning Activities

Navajo County applied for and received a PDM planning grant to fund a multi-jurisdictional effort to review, update and consolidate the 2011 Plan. Navajo County selected a consultant to work with the participating jurisdictions and guide the planning process. The consultant's contract was terminated by the County and therefore the Arizona Division of Emergency and Military Affairs Hazard Mitigation Manager's office supported Navajo County with the remainder of the planning effort. An initial project kick-off meeting between the original consultant and the Hazard Mitigation Planning Team (the Team) was convened on July 19, 2016 to begin the planning process, outline the plan objectives, outline the planning process, and to discuss other administrative tasks. Individuals invited to participate on the Planning Team included all the communities within the County, Fire Districts, neighboring Indian Tribes, Department of Transportation, Game and Fish Department, Department of Public Safety, AZ Public Service (APS), BNSF Railway, local Fire and Law Enforcement Departments, and the Department of Environmental Quality.

Invited members of the Team that were unable to make the kickoff meeting were contacted by the Navajo County Emergency Management Director and were provided with the meeting materials and asked to participate in the next meeting.

A second Team meeting was held on October 19, 2016. Previous to the meeting the goals and mitigation actions from the 2011 meeting was sent to the Team to prepare the team for the planned discussion. This meeting reviewed the mitigation Goals, Risk Hazard Review, Capabilities, Previous Mitigation Actions, and Discussed New Mitigation Actions.

The Third Team meeting was held on March 22, 2017 in Snowflake. This meeting reviewed the incorporated changes provided by participants and was open to the public. The meeting attendees reviewed the Mitigation Goals, updated the CPRI index, reviewed the new mitigation actions and updated capabilities for the participating jurisdictions. The team also updated and reviewed the plan maintenance procedures and discussed what maintenance actions were utilized since the last update. The team was asked to review the draft document and comment.

A fourth Team meeting was held on May 31st, 2017 in Holbrook to discuss and finalize any last changes in the Hazard Plan. The plan and tables were reviewed with the meeting participants and additional updates were incorporated into the plan document. The team also discussed plans for ongoing public outreach and plan updates. The decision to meet annually in June each year to discuss changes and updates was agreed upon by the planning team.

The meeting documentation is included in this Plan's Appendix.

3.3 Planning Teams

The planning team included members from each community who attended meetings and provided information through the Planning Team Lead, Mary Springer. A consultant was contracted to provide technical assistance and planning for this update and was transitioned over to Arizona Department of Emergency and Military Affairs Mitigation Section, Susan Austin and her team for finalization and submittal to FEMA.

The role of the Team was to work with the planning consultant and DEMA to perform the coordination, research, and planning element activities required to update the 2011 Plans. Attendance by each participating jurisdiction was required for every planning team meeting as the meetings were structured to progress through the planning process. Steps and procedures for updating the 2011 plans were presented and discussed at each planning team meeting, and assignments to review and provide input/updates to the plan were normally given. Each meeting built on information discussed and assignments given at the previous meeting. The function of the team was to provide support and data; assist in community specific updates; make planning decisions regarding plan components; and review the plan draft documents.

Planning Team Assembly

At the beginning of this planning process, Navajo County organized and identified members for the Planning Team by initiating contact with, and extending invitations to, all incorporated communities within the county limits, as well as the Arizona Department of Emergency and Military Affairs (DEMA) and the consultant. Other entities that were subsequently invited to participate are discussed in this section. The participating members of the planning team are summarized below and returning members are highlighted.

Table 3-2: Planning Team

Name	Agency
Catrina Jenkins	Navajo County Emergency Management
Doyce Stuart	City of Holbrook
Bobby Martin	Town of Snowflake
Becky Petersen	Navajo County Flood Control
Bob Schlesinger	Navajo County Public Health Preparedness
Dan Dymond	Arizona Game and Fish
Nathan Christensen	Navajo County Sheriff's Office
Brian Russell	Timber Mesa Fire and Medical

Table 3-2: Planning Team	
Name	**Agency**
Ken Arend	City of Winslow Police Dept
Clint Burden	Taylor-Snowflake Fire
Quentin Begody	City of Winslow Police Dept
Sandra Phillips	Navajo County Emergency Management
Bill Bess	Navajo County Public Works
Jim Morgan	Pinetop Fire Dept
Nic Nunn- Faron	American Red Cross
Tim Westover	City of Winslow
Jennifer Flake	Navajo County Public Health Preparedness
Steve Pauken	City of Winslow
Adam Wolfe	Navajo County Administration
Rich Upham	Heber-Overgaard Fire Dept
Bill Kopp	City of Show Low Public Works Director

Table 3-3: Planning Team Resources		
Name	**Agency**	**Contribution**
Tony Merriman	National Weather Service	Climate information
Cory Helton	JE Fuller	Rain gauge shape files
Becky Peterson	Navajo County Flood Control	Levee and flood control information
Kimberly Campbell	Arizona Department of Transportation (ADOT)	Hazard mitigation project being performed by ADOT
Ryan Taylor	Navajo County GIS	Map information
Chris Bockey	Logan Simpson Design	CWPP WUI maps

3.4 Public and Stakeholder Involvement

Plan Update

Public involvement and input to the planning process was encouraged cooperatively among all of the participating jurisdictions using several venues throughout the course of the pre-draft planning. The planning team discussed various options for public involvement including using the press releases/public service announcements, newspaper articles, and general public announcements, council/board briefings at a working session, web page postings, and social media posts. The following strategy was formulated and implemented:

- Each participating jurisdiction was to include a similar notice on their webpage with a link pointing the county's webpage for more information. On the county website, contact information was provided for comments. Additionally, city and town postings also included contact information for the Planning Team representative for their community. Comments received by towns or cities are to be routed to the Planning Team Primary Point of Contact for addressing.
- The standard open meeting processes used by the County and each jurisdiction for their respective board / council adoption process.
- A newspaper notice was published directing readers to the location on the County website of the current Plan and the draft plan, as well as to the location of the next Team meeting and how to provide comments.

In addition to the above activities, the jurisdictions sought out opportunities to keep the public and their stakeholders aware of the Plan and related mitigation and hazard related efforts/activities. These activities are summarized below.

Table 3-4: Past Public/Stakeholder Involvement Activities

Navajo County	• A copy of the current Plan posted on County website, allow for comment, respond to inquiries and comment on development plans as well as other mitigation efforts • Make available the mitigation brochures and other information produced and provided DEMA at the Navajo Co Complex and other related offices throughout Navajo County • Participation in, and distribution of, hazard mitigation planning materials at: volunteer meetings, city/town council meetings, and at the annual Navajo County Fair • Adopted the 2016 Sitgreaves and Central Navajo Community Wildfire Protection Plans • Applied for Western Bark Beetle and Wildland Hazardous Fuel grant programs • Conducted site surveys with homeowners in Pinetop-Lakeside and homeowner associations in Overgaard for inclusion in the Nationally recognized Fire Adapted Communities program • Became a Storm Ready Ambassador and Storm Ready Community achieving the highest level of preparedness for extreme weather Annual presentation to the Board of Supervisors summarizing annual review findings on the hazard mitigation plan and summarizing noteworthy mitigation activities
Holbrook	• Make available the mitigation brochures and other information produced and provided DEMA at the City offices and public events • Promoted Ready Navajo County emergency notification system at public events within Holbrook

Table 3-4: Past Public/Stakeholder Involvement Activities	
Pinetop-Lakeside	• Town transitioned to a new municipal building April 2016, and the Plan was inadvertently removed. The 2011 Plan is now available on the Town's website www.pinetoplakesideaz.gov • Town staff participates in trainings/meetings; disseminates information regarding the dangers cited in the Plan, especially during inclement weather events (snow, high wind, etc.); and participates in wildfire trainings and information dissemination and emergency management. • Staff and leadership participate in EMCIE meetings with local professionals on regular basis to discuss hazard mitigation events. • Staff facilitated the adoption of the Town's Floodplain Regulations via Ordinance 14-384 § 1 (12/2014) per ARS. • Town transitioned and encouraged citizens and the general public to join Ready Navajo County Notification System https://member.everbridge.net/index/453003085612436#/login. The Town places applicable information on the Town's website and Facebook regarding hazards cited in the Plan, and provides brochures seasonally. The Town has direct links to Timber Mesa Fire and Medical District; Pinetop Fire District.
Show Low	• Wildland fire officials distributed fire risk and mitigation information during the Show Low Days event in June. • Adopted the 2016 Sitgreaves and Central Navajo Community Wildfire Protection Plans
Snowflake	• Jointly participated in an Emergency Preparedness Fair held in August with the Town of Taylor Adopted the 2016 Central Navajo Community Wildfire Protection Plan • Snowflake-Taylor CERT team participated in numerous public events promoting the Ready Navajo County emergency notification system to the public
Taylor	• Jointly participated in an Emergency Preparedness Fair held in September with Snowflake • Adopted the 2016 Central Navajo Community Wildfire Protection Plan
Winslow	• Winslow conducted public meetings with the release of the new DFIRMs and the de-certification of the Winslow Levee.

3.5 Reference Documents & Technical Resources

Over the course of the update planning process, numerous other plans, studies, reports, and technical information were obtained and reviewed for incorporation or reference purposes. The majority of sources referenced and researched pertain to the risk assessment and the capabilities assessment. To a lesser extent, the community descriptions and mitigation strategy also included some document or technical information research. The table below provides a reference listing of the primary documents and technical resources reviewed and used in the Plan.

Table 3-5: Resources Reviewed for Plan Incorporation/Reference		
Document or Technical Source	**Resource Type**	**Reference and Its Use**
Arizona Department of Commerce	Website Data and Community Profiles	Reference for demographic and economic data for the county. Used for community descriptions.
AZ Dept of Emergency & Military Affairs	Data and Planning Resource	Resource for state and federal disaster declaration information for Arizona. Also a resource for hazard mitigation planning guidance and documents.

Table 3-5: Resources Reviewed for Plan Incorporation/Reference		
AZ Dept of Water Resources	Technical Resource	Resource for data on drought conditions and statewide drought management (AzGDTF), and dam safety data. Used in risk assessment.
AZ Emergency Response Commission	Technical Resource	Resource for HAZMAT facility and commodity flow studies.
AZ State Land Dept	Data Source	Source for statewide GIS coverage (ALRIS) and statewide wildfire hazard profile information (Division of Forestry). Used in the risk assessment.
AZ Wildland Urban Interface Assessment	Report	Source of wildfire hazard profile data and urban interface at risk communities. Used in the risk assessment.
Arizona Workforce Informer	Website	Source for employment statistics in Arizona.
Bureau Net	Website Database	Source for NFIP statistics for Arizona.
Central Navajo County Community Wildfire Protection Plan	Community Wildfire Protection Plan	Source of wildfire hazard profile data for hazard mapping and risk assessment
City of Holbrook General Plan	General Plan	Source for history, demographic and development trend data.
City of Show Low General Plan (2007)	General Plan	Source for history, demographic and development trend data.
City of Winslow General Plan (2002)	General Plan	Source for history, demographic and development trend data.
Environmental Working Group's Farm Subsidy Database (2009)	Website Database	Source of disaster related agricultural subsidies. Used in the risk assessment.
Federal Emergency Management Agency	Technical and Planning Resource	Resource for HMP guidance (How-To series), floodplain and flooding related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.
HAZUS-MH	Technical Resource	Based data sets within the program were used in the vulnerability analysis.
National Climatic Data Center	Technical Resource	Online resource for weather related data and historic hazard event data. Used in the risk assessment.
National Integrated Drought Information System	Technical Resource	Source for drought related projections and conditions. Used in the risk assessment.
National Inventory of Dams	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
National Response Center	Technical Resource	Source of traffic related HAZMAT incidents and rail accidents. Used in the risk assessment.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Navajo County Flood Control District	Technical Resource	Resource for floodplain, levee, and dam failure data. Used in the risk assessment.
Navajo County Comprehensive Plan	Comprehensive Plan	Source for history, demographic and development trend data for the county.
Standard on Disaster/Emergency Management and Business Continuity Programs (2000)	Standards Document	Used to establish the classification and definitions for the asset inventory. Used in the risk assessment.
State of Arizona MHMP	Hazard Mitigation Plan	Used a source of hazard information and the state identified hazards were used as a starting point in the development of the risk assessment.
Town of Pinetop-Lakeside General Plan	General Plan	Source for history, demographic and development trend data.
Town of Snowflake General Plan	General Plan	Source for history, demographic and development trend data.

Table 3-5: Resources Reviewed for Plan Incorporation/Reference		
Town of Taylor General Plan	General Plan	Source for history, demographic and development trend data.
USACE Flood Damage Report	Technical Data	Source of historic flood damages for 1978 flood. Used in the risk assessment.
USACE Flood Damage Report	Technical Data	Source of historic flood damages for 1993 flood. Used in the risk assessment.
U.S. Forest Service	Technical Data	Source for local wildfire data. Used in the risk assessment.
U.S. Geological Survey	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Western Regional Climate Center	Website Data	Online resource for climate data used in climate discussion of Section 4
World Wildlife Fund	GIS Data	Terrestrial ecoregions database used in the general county description.

SECTION 4: RISK ASSESSMENT

4.1 Section Changes

- The loss estimation tables were omitted from this Plan and replaced with a qualitative approach and representation of the risk and vulnerabilities of the communities to the identified hazards.

One of the key elements to the hazard mitigation planning process is the risk assessment. In performing a risk assessment, a community determines "what" can occur, "when" (how often) it is likely to occur, and "how bad" the effects could be. The primary components of a risk assessment that answer these questions are generally categorized into the following measures:

Hazard Identification

Hazard Profiling

Assessing Vulnerability

The risk assessment for Navajo County was performed using a county-wide, multi-jurisdictional perspective, with much of the information gathering and development being accomplished by the Planning Team. This integrated approach was employed because many hazard events are likely to affect numerous jurisdictions within the County, and are not often relegated to a single jurisdictional boundary. The vulnerability analysis was performed in a way such that the results reflect vulnerability at an individual jurisdictional level, and at a countywide level.

4.2 Hazard Identification

For this Plan, the list of hazards identified in the 2011 Plan were reviewed with the goal of refining the list to reflect the hazards that pose the greatest risk to the jurisdictions represented by this Plan. The hazards identified in the 2011 Plan are:

- Dam Failure
- Drought
- Flooding
- Hazardous Materials Incidents
- Levee Failure
- Severe Wind
- Wildfires
- Winter Storm

The review included an initial screening process to evaluate each of the listed hazards based on the following considerations:

- Experiential knowledge of the planning team with regard to the relative risk associated with the hazard
- Documented historic information of damages and losses associated with past events (especially events that have occurred during the last plan cycle)
- The ability/desire of planning team to develop effective mitigation for the hazard
- Duplication of effects attributed to each hazard

One tool used in the initial screening process was the historic hazard database referenced in the 2011 Plan. Declared event sources included Navajo Co Dept of Emergency Management, AZ Dept of Emergency and Military Affairs (DEMA), Federal Emergency Management Agency (FEMA), and US Dept of Agriculture (USDA). There were no changes to the table as there were no declared events during the previous Plan cycle.

Table 4-1: Declared Hazard Events - Feb 1966-June 2017

Hazard	Declared Events That Included Navajo County Jan 1966 – June 2017		
	No. of Events	Total Expenditures	
		State	Federal
Drought	4	$ 254,344	$ 0
Dam Failure	1	$ 0	$ 0
Flooding / Flash Flooding	11	$ 40,233,075	$ 322,023,270
Severe Wind	1	$ 5,551	$ 0
Wildfire	19	$ 7,381,208	$ 4,500,000
Winter Storm	5	$ 4,284,874	$ 5,109,724

Notes: Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
- Nothing to report for Earthquake, Extreme Heat, Fissure, Landslide/Mudslide, Levee Failure and Subsidence hazards.
- Source: DEMA 2017

The culmination of the review by the Planning Team did not result in any changes and the plan hazards remain as follows:

- **Dam Failure**
- **Drought**
- **Flooding**
- **Hazardous Materials Incidents**
- **Levee Failure**
- **Severe Wind**
- **Wildfire**
- **Winter Storm**

4.3 Vulnerability Analysis Methodology

General

For the purposes of this vulnerability analysis, hazard profile maps were developed for Dam Failure, Flooding, HazMat, Levee Failure, and Wildfire to map the geographic variability of the probability and magnitude risk of the hazards as estimated by the Planning Team. Hazard profile categories of High, Medium, and/or Low were used and were subjectively assigned based on the factors discussed in the Probability and Magnitude sections below. Within the context of the county limits, the other hazards do not exhibit significant geographic variability and will not be categorized as such.

Calculated Priority Risk Index (CPRI) Evaluation

To assess the perceived overall risk for each of the Plan hazards the Planning Team utilized the Calculated Priority Risk Index (CPRI). The CPRI value is obtained by assigning varying degrees of risk for each hazard, and then calculating an index value based on a weighting scheme. The table below summarizes the CPRI risk categories and provides guidance regarding the assignment of values and weighting factors.

As an example, assume that the project team is assessing the hazard of flooding, and has decided that the following assignments best describe the flooding hazard for their community:

- Probability = Likely
- Magnitude/Severity = Critical
- Warning Time = 12 to 24 hours
- Duration = Less than 6 hours

The CPRI for would then be: CPRI = [(3*0.45) + (3*0.30) + (2*0.15) + (1*0.10)] CPRI = 2.65

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	**Description**	**Index Value**	
Probability	Unlikely	• Extremely rare with no documented history of occurrences or events. • Annual probability of less than 0.001.	1	45%
	Possible	• Rare occurrences with at least one documented or anecdotal historic event. • Annual probability that is between 0.01 and 0.001.	2	
	Likely	• Occasional occurrences with at least two or more documented historic events. • Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	• Frequent events with a well-documented history of occurrence. • Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	• Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). • Injuries or illnesses are treatable with first aid and there are no deaths. • Negligible quality of life lost. • Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	• Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). • Injuries or illnesses do not result in permanent disability and there are no deaths. • Moderate quality of life lost. • Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	• Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). • Injuries or illnesses result in permanent disability and at least one death. • Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	• Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). • Injuries or illnesses result in permanent disability and multiple deaths. • Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hours	Self-explanatory.	4	15%
	6 to 12 hours	Self-explanatory.	3	
	12 to 24 hours	Self-explanatory.	2	
	More than 24 hours	Self-explanatory.	1	
Duration	Less than 6 hours	Self-explanatory.	1	10%

	Less than 24 hours	Self-explanatory.	2	
	Less than one week	Self-explanatory.	3	
	More than one week	Self-explanatory.	4	

4.4 Hazard Risk Profiles

The following sections summarize the risk profiles for each of the Plan hazards identified. The following elements are addressed to present the overall risk profile:

- **Description**
- **History**
- **Probability and Magnitude**
- **Vulnerability**
- **Sources**
- **Profile Maps (if applicable)**

The 2011 Plan data has been reviewed and updated and/or revised to reflect current conditions where necessary. County-wide and jurisdiction specific profile maps are provided at the end of the section (if applicable).

4.4.1 Dam Failure

Description

The primary risk associated with dam failure in Navajo County is the inundation of downstream facilities and population by the resulting flood wave. Dams within or impacting Navajo County can generally be divided into two groups: (1) storage reservoirs designed to permanently impound water, provide flood protection, and possibly generate power, and (2) single purpose flood retarding structures (FRS) designed to attenuate or reduce flooding by impounding storm water for relatively short durations of time during flood events. The majority of dams within Navajo County are earthen FRS equipped with emergency spillways. The purpose of an emergency spillway is to provide a designed and protected outlet to convey runoff volumes exceeding the dam's storage capacity during extreme or back-to-back storm events. Dam failures may be caused by a variety of reasons including: seismic events, extreme wave action, leakage and piping, overtopping, material fatigue and spillway erosion.

History

- June 10, 1982, Clear Creek Dam No. 2, located south of Winslow, failed by piping caused by spring seepage under the earthen dam. No injuries or property damages were reported and the dam was reconstructed in the same and following years.

There have not been any reports of dam failure for the County during the previous Plan cycle.

Probability and Magnitude

The probability and magnitude of dam failure discharges vary greatly with each dam and are directly influenced by the type and age of the dam, its operational purpose, storage capacity and height, downstream conditions, and many other factors. There are two sources of data that publish hazard ratings for dams impacting Navajo County. The first is the Arizona Department of Water Resources (ADWR) and the second is the National Inventory of Dams (NID). Hazard ratings from each source are based on either an assessment of the consequence of failure and/or dam safety considerations, and they are not tied to probability of occurrence.

ADWR has regulatory jurisdiction over the non-federal dams impacting the County and is responsible for regulating the safety of these dams, conducting field investigations, and participating in flood mitigation programs with the goal of minimizing the risk for loss of life and property to the citizens of Arizona. ADWR jurisdictional dams are inspected regularly according to downstream hazard potential classification, which follows the NID classification system. High hazard dams are inspected annually, significant hazard dams every three years, and low hazard dams every five years. Via these inspections, ADWR identifies safety deficiencies requiring correction and assigns each dam one of six safety ratings. Examples of safety deficiencies include: lack of an adequate emergency action plan, inability to safely pass the required Inflow Design Flood (IDF), embankment erosion, dam stability, etc.

Table 4-2: ADWR Safety Categories

ADWR Safety Rating	Definition
No Deficiency	Not Applicable
Safety Deficiency	One or more conditions at the dam that impair or adversely affects the safe operation of the dam.
Unsafe Categories	
Category 1: Unsafe Dams with Elevated Risk of Failure	These dams have confirmed safety deficiencies for which there is concern they could fail during a 100-year or smaller flood event. There is an urgent need to repair or remove these dams.

Table 4-2: ADWR Safety Categories	
ADWR Safety Rating	**Definition**
Category 2: Unsafe Dams Requiring Rehabilitation or Removal	These dams have confirmed safety deficiencies and require either repair or removal. These dams are prioritized for repair or removal behind the Category 1 dams.
Category 3: Unsafe Dams with Uncertain Stability during Extreme Events (Requiring Study)	Concrete or masonry dams that have been reclassified to high hazard potential because of downstream development (i.e. hazard creep"). The necessary documentation demonstrating that the dams meet or exceed standard stability criteria for high hazard dams during extreme overtopping and seismic events is lacking. The dams are classified as unsafe pending the results of required studies. Upon completion of these studies, the dams are either removed from the list of unsafe dams or moved to Category 2 and prioritized for repair or removal.
Category 4: Unsafe Dams Pending Evaluation of Flood-Passing Capacity (Requiring Study)	In 1979, the U.S. Army Corps of Engineers established Federal Guidelines for assessing the safe-flood passing capacity of high hazard potential dams (CFR Vol. 44 No. 188). These guidelines established one-half of the "probable maximum flood" (PMF) as the minimum storm which must be safely passed without overtopping and subsequent failure of the dam. Dams unable to safely pass a storm of this size were classified as being in an "unsafe, non-emergency" condition. Prior studies for these earthen dams (mostly performed in the 1980's) predicted they could not safely pass one-half of the PMF. They were predicted to overtop and fail for flood events ranging from 30-46% of the PMF. Recent studies both statewide and nationwide have indicated that the science of PMF hydrology as practiced in the 1990's commonly overestimates the PMF for a given watershed. The ADWR is leading efforts on a statewide update of probably maximum precipitation (PMP) study scheduled for completion in 2011. These dams should be re-evaluated using updated methods to confirm their safety status. Upon completion of these evaluations, they are either removed from the list of unsafe dams or moved to Category 2 and prioritized for repair or removal.
Source: ADWR, 2009.	

The NID database contains information on approximately 77,000 dams in the 50 states and Puerto Rico, with approximately 30 characteristics reported for each dam, such as: name, owner, river, nearest community, length, height, average storage, max storage, hazard rating, Emergency Action Plan (EAP), latitude and longitude.

The NID and ADWR databases provide useful information on the potential hazard posed by dams. Each dam in the NID is assigned one of the following three hazard potential classes based on the potential for loss of life and damage to property should the dam fail (listed in increasing severity): low, significant, or high. The hazard potential classification is based on an evaluation of the probable present and future incremental adverse consequences that would result from the release of water or stored contents due to failure or improper operation of the dam or appurtenances, regardless of the condition of the dam. The ADWR evaluation includes land-use zoning and development projected for the affected area over the 10-year period following the classification of the dam. It is important to note that the hazard potential classification is an assessment of the consequences of failure, but not an evaluation of the probability of failure or improper operation. The table below summarizes the hazard potential classifications and criteria for dams regulated by the State of Arizona.

Table 4-3: Downstream Hazard Potential Classes for State Regulated Dams		
Hazard Potential	**Loss of Human Life**	**Economic, Environmental, Lifeline Losses**
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification
Source: ADWR and NID 2009		

The NID database includes dams that are either:

- High or Significant hazard potential class dams, or,
- Low hazard potential class dams that exceed 25 feet in height and 15 acre-feet storage, or,
- Low hazard potential class dams that exceed 50 acre-feet storage and 6 feet height.

There are over 50 dams in Navajo County based on the two databases. Thirty-six (36) of the dams are low hazard dams with 30 of those existing on the Navajo and Hopi Indian Reservations and 21 are under ADWR jurisdiction. The table below provides a summary of the high and significant hazard dams in both the ADWR and NID databases, located in Navajo County.

The magnitude of impacts due to dam failure are usually depicted by mapping the estimated downstream inundation limits based on an assessment of a combination of flow depth and velocity. These limits are typically a critical part of the emergency action plan. Of the dams considered, only seven (7) emergency action plans showing downstream dam failure inundation limits were readily available. For inundation resulting from dam failure, the following two classes of hazard risk are depicted:

High Hazard = Inundation limits due to dam failure

Low Hazard = All other areas outside the inundation limits

Table 4-4: NID & ADWR Dams by Hazard Classification								
Hazard Class	**SID**	**NID**	**Dam Name**	**ADWR Safety Types**	**EAP**	**Inundation Mapping**	**Nearest Downstream Development**	**Distance in Miles**
High	09.07	AZ00059	Millett Swale	Unsafe Dams Requiring Rehabilitation or Removal	Outdated (1997)	Yes	Taylor & Shumway	4
	09.09	AZ00012	Lone Pine	Unsafe Dams Requiring Rehabilitation or Removal	Outdated (1994)	No	Schoens Dam	6.5
	09.11	AZ00013	Daggs	Safety Deficiency	Outdated (1997)	No	Taylor	8
	09.13	AZ00023	Jaques	Unsafe Dams Pending Evaluation of Flood-Passing Capacity	Yes	Yes	Show Low	4
	09.18	AZ00044	Woodland	Safety Deficiency	Draft	Draft	Pinetop & Lakeside	3
	09.19	AZ00051	Fool Hollow	Unsafe Dams Pending Evaluation of Flood-Passing Capacity (Requiring Study)	Yes	Yes	Taylor	14
	09.20	AZ00042	Black Canyon	Unsafe Dams Requiring	Yes	Yes	Heber & Overgaard	9.9
				Rehabilitation or Removal				

Table 4-4: NID & ADWR Dams by Hazard Classification								
Hazard Class	**SID**	**NID**	**Dam Name**	**ADWR Safety Types**	**EAP**	**Inundation Mapping**	**Nearest Downstream Development**	**Distance in Miles**
	09.27	AZ00178	Cholla Bottom Ash Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.28	AZ00179	Cholla Fly Ash Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.33	AZ00207	Schoens	No Deficiency	Yes	Yes	Taylor	6
	N/A	AZ10415	Bootleg	N/A	Yes	Yes	Amos Ranch	4
	N/A	AZ10416	Cooley	N/A	Yes	Yes	Amos Ranch	4
Significant	09.14	AZ00056	Scott	Safety Deficiency	No	No	Jaques Dam & Show Low	5
	09.16	AZ00024	Lakeside	Safety Deficiency	No	No	Show Low	7
	09.29	AZ00180	Cholla Cooling Pond	No Deficiency	Yes	Yes	Joseph City	5
	09.30	AZ00181	Trophy Lake	No Deficiency	Yes	Yes	Taylor	9
	09.34	AZ00208	Jacques Marsh	No Deficiency	Yes	Yes	Show Low	4
Sources: NID, ADWR Dam Safety Database								

Vulnerability

Table 4-5: CPRI Rating for Dam Failure					
Participating Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Holbrook	Unlikely	Negligible	> 24 hours	< 6 hours	1.00
Pinetop-Lakeside	Unlikely	Limited	> 24 hours	< 6 hours	1.00
Show Low	Unlikely	Catastrophic	< 6 hours	< 24	2.45
Snowflake	Possibly	Catastrophic	< 6 hours	> 1 week	3.10
Taylor	Possibly	Critical	6 - 12 hours	> 1 week	2.65
Winslow	Possibly	Limited	6 - 12 hours	< 24	2.15
Unincorporated Navajo	Possibly	Limited	12 - 24 hours	> 1 week	2.20

Any storm event, or series of storm events of sufficient magnitude to cause an overtopping dam failure scenario, would have potentially catastrophic consequences in the inundation area. Most "sunny day" failures will also be equally devastating due to the sudden release of very large volumes of water. Flood waves from these types of events travel very fast and possess tremendous destructive energy. Area downstream of dams is significantly vulnerable to flood inundation and such inundation could occur with little warning and with high loss levels. Impacted structures can be considered lost and significant damage to infrastructure such a stream crossing, utilities, and roads can be expected. It should be noted that the Planning Team recognizes that the probability of a dam failure occurring at multiple (or all) locations at the same time is essentially null. The potential for deaths and injuries are directly related to the warning time and type of event. Given the magnitude of such an event(s), it is realistic to anticipate at least one death and several injuries. There is also a high probability of population displacement for most of the inhabitants

within the inundation limits downstream of some of the dam(s).

Development Trend Analysis

The flood protection afforded by dams in Navajo County has encouraged development of downstream lands and it reasonable to expect additional development within these areas. Public awareness measures such as notices on final plats and public education on dam safety are ways that the county and local city and town officials can mitigate the potential impact of a dam failure.

Sources

AZ Dept of Water Resources, 2009, http://www.azwater.gov/AzDWR/SurfaceWater/DamSafety/default.htm

AZ Dept of Emergency and Military Affairs, 2013, *State of Arizona Multi-Hazard Mitigation Plan*

US Army Corps of Engineers, National Inventory of Dams, 2009, https://nid.usace.army.mil/

4.4.2 Drought

Description

Drought is a normal part of virtually every climate on the planet, including areas of high and low rainfall. It is different from normal aridity, which is a permanent characteristic of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997).

Drought is a complex natural hazard which is reflected in the following definitions commonly used to describe it:

- Meteorological – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Socioeconomic – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

History

Arizona has experienced several drought periods affecting multiple years between 1849 and 1905, the most prolonged period of drought conditions in 300 years occurred in Arizona (Jacobs, 2003). Another prolonged drought occurred during the period of 1941-1965. The period from 1979-1983 appears to have been anomalously wet, while the rest of the historical records shows that dry conditions are most likely the normal condition for Arizona. During 1998-2007, there have been more months with below normal precipitation than months with above normal precipitation.

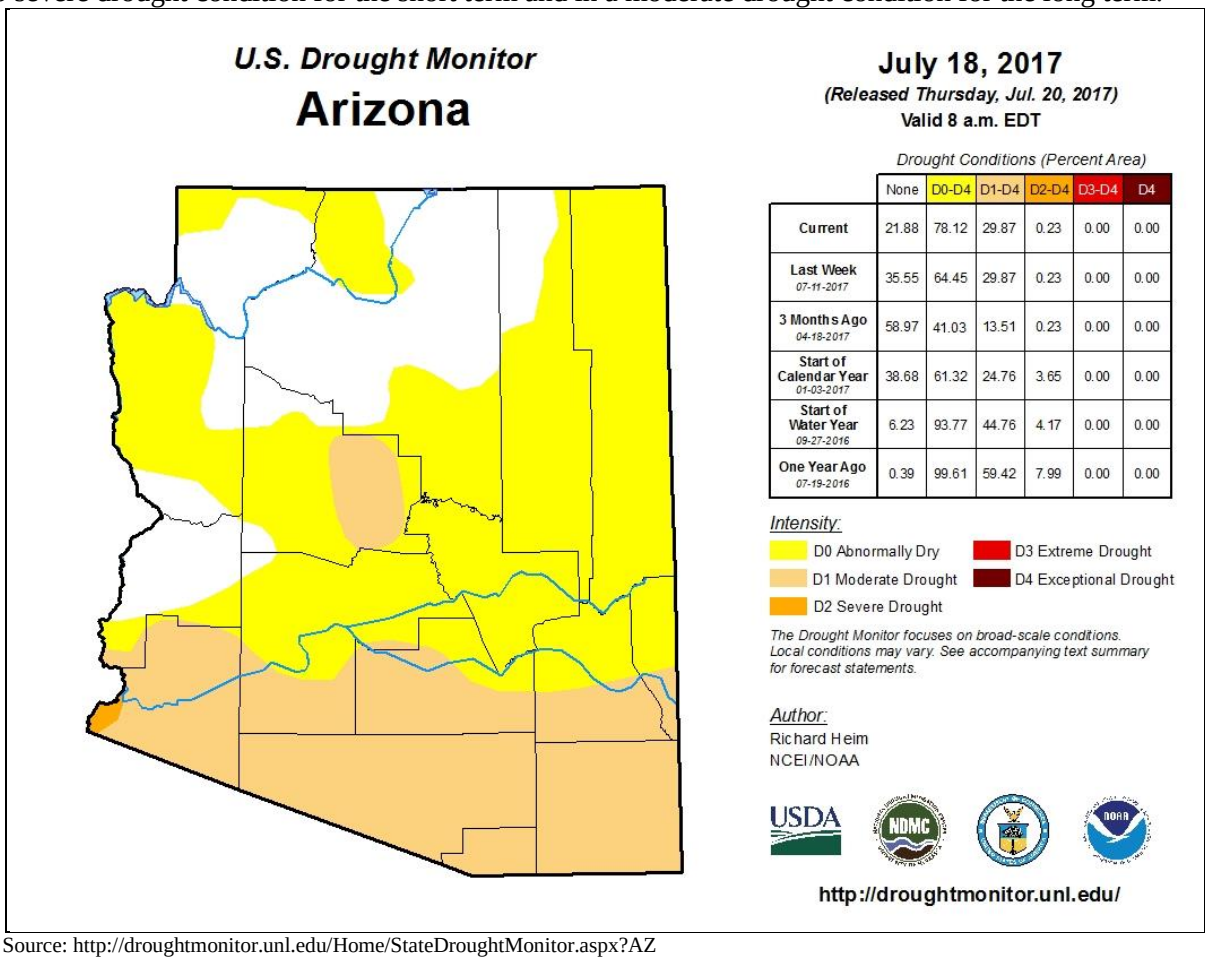
Since the last update of this Plan there have been no reports of severe drought events in the County.

Probability and Magnitude

There is no commonly accepted return period or non-exceedance probability for defining the risk from drought (such as the 100-year or 1% annual chance of flood). The magnitude of drought is usually measured in time and the severity of the hydrologic deficit. There are several resources available to evaluate drought status and even project expected conditions for the very near future.

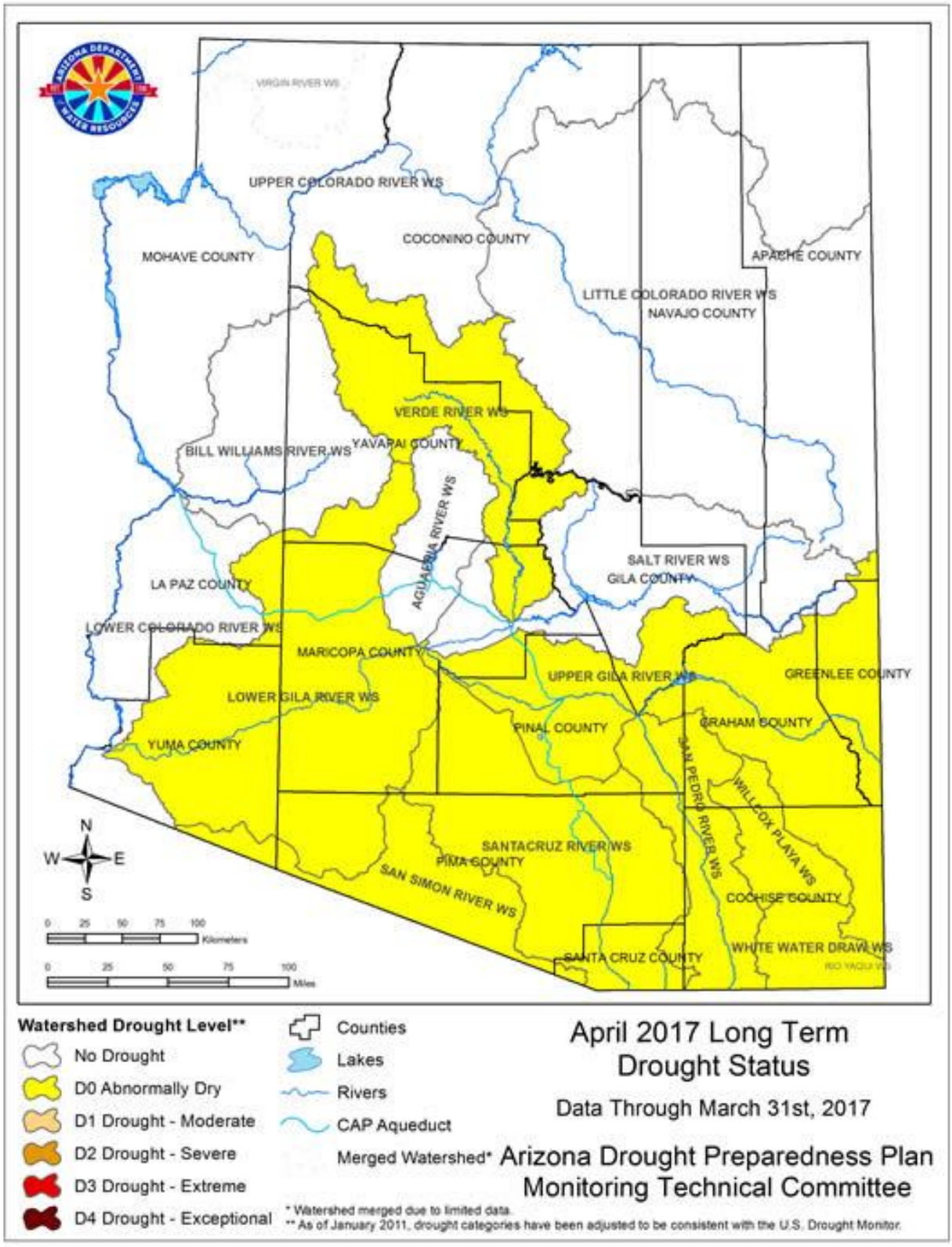
In 2003, Governor Janet Napolitano created the Arizona Drought Task Force (ADTF), led by ADWR, which developed a statewide drought plan. The plan includes criteria for determining both short and long-term drought status for each of the 15 major watersheds in the state using assessments that are based on precipitation and stream flow. The plan also provides the framework for an interagency group which reports to the governor on drought status, in addition to local drought impact groups in each county and the State Drought Monitoring Technical Committee. Twice a year this interagency group reports to the governor on the drought status and the potential need for drought declarations. The counties use the monthly drought status reports to implement drought actions within their drought plans. The State Drought Monitoring Technical Committee defers to the USDM for the short-term drought status and uses a combination of the Standardized Precipitation Index (SPI), evaporation and streamflow for the long-term drought status.

The current drought maps are in general agreement that Navajo County is currently experiencing a moderate to severe drought condition for the short term and in a moderate drought condition for the long term.



Source: http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?AZ

Figure 4-4: Drought Status as of July 18, 2017



Source: ADWR, 2011 as accessed at: http://www.azwater.gov/AzDWR/StatewidePlanning/Drought/DroughtStatus2.htm

Figure 4-5: Long-Term Drought Status April 2017

Vulnerability

Table 4-6: CPRI Rating for Drought

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Highly Likely	Limited	> 24 hours	> 1 week	2.95
Pinetop-Lakeside	Likely	Limited	> 24 hours	> 1 week	2.50
Show Low	Likely	Limited	> 24 hours	> 1 week	2.50
Snowflake	Highly Likely	Critical	> 24 hours	> 1 week	3.25
Taylor	Highly Likely	Limited	> 24 hours	> 1 week	3.25
Winslow	Highly Likely	Critical	12 - 24 hours	> 1 week	3.40
Unincorporated Navajo County	Highly Likely	Limited	> 24 hours	> 1 week	2.95

No standardized methodology exists for estimating losses due to drought and drought does not generally have a direct impact on critical facilities and building stock. A direct correlation to loss of human life due to drought is improbable for the County. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the County economy and natural resources including crop and livestock agriculture; municipal and industrial water supply; recreation/tourism; and wildlife and wildlife habitat.

The county farming and ranching industries are directly affected by extended drought conditions. The primary source of water for irrigated farming is groundwater and some surface water tributaries to the Little Colorado River such as Silver Creek. Rangeland ranching is dependent upon groundwater and captured rainfall runoff via stock tanks and rain catchments. Extended drought conditions reduce rangeland grasses and other fodder. Stock tank water levels and replenishment are also significantly reduced. This forces ranchers to feed more hay and to truck in water to sustain their rangeland herds. The expense of these activities forces ranchers to drastically reduce herd sizes, flooding the markets with excess animals and tumbling livestock prices. Then supplies in following years are drastically reduced due to lack of rangeland and water and prices soar. These expenses are translated into the County economy as a two-fold hardship. One is an economic hardship for merchants and retailers that provide goods and services to the ranching community. Second is increased cost due to a reduced supply in ranching commodities.

From 1995-2014, the County farmers and ranchers received $6.7 million in disaster related assistance funding from the U.S Dept of Agriculture (EWG, 2014). The majority of those funds was received during the time period of 2001 to 2011 and is associated with livestock assistance and aid. The 2001- 2011 time period also corresponds to the most severe period of the recent drought cycle for Navajo County. Other direct impacts associated with increased pumping costs due to lowering of groundwater levels and costs to expand water infrastructure to compensate for reduced yields or to develop alternative water sources, are significant but very difficult to estimate due to a lack of documentation. There are also the intangible costs associated with lost tourism revenues, and impacts to wildlife habitat and animals. Typically, these impacts are translated into the general economy in the form of higher food and agricultural goods prices and increased utility costs.

Sustained drought conditions will also have secondary impacts by increasing risks associated with hazards such as fissures, flooding, subsidence and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to insect infestation and ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decrease the interception of rainfall and increase the flooding hazard. Subsidence and fissure conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharge from normal rainfall.

Development Trends

It is unlikely that significant growth will occur in the ranching and farming sectors given the current constraints on water rights, grazing rights, and available range land. However, drought planning will continue to be a critical component of any domestic water system expansions or land development planning. The ADTF is also working cooperatively with water providers within the State to develop System Water Plans that are comprised of three components:

- *Water Supply Plan* – describes the service area, transmission facilities, monthly system production data, historic demand for the past five years, and projected demands for the next five, 10 and 20 years.
- *Drought Preparedness Plan* – includes drought and emergency response strategies, a plan of action to respond to water shortage conditions, and provisions to educate and inform the public.
- *Water Conservation Plan* – addresses measures to control lost and unaccounted for water, considers water rate structures that encourage efficient use of water, and plans for public information and education programs on water conservation.

The combination of these requirements will work to ensure that future development in Navajo County will recognize drought as a potential constraint.

Sources

Arizona Department of Water Resources, 2011, Drought Program website
http://www.azwater.gov/azdwr/StatewidePlanning/Drought/default.htm

https://datausa.io/profile/geo/navajo-county-az/#intro

AZ Dept of Emergency and Military Affairs, 2010, *State of Arizona Multi-Hazard Mitigation Plan*

Environmental Working Group's Farm Subsidy Database, 2014, https://farm.ewg.org/region.php?fips=04017

Federal Emergency Management Agency 1997, *Multi-Hazard Identification and Risk Assessment – A Cornerstone of the National Mitigation Strategy.*

Jacobs, Katharine and Morehouse, Barbara, June 11-13, 2003. "Improved Drought Planning for Arizona," from Conference on Water, Climate, and Uncertainty: Implications for Western Water Law, Policy and Management
http://www.water.az.gov/gdtf/content/files/06262003/Improved_Drought_Planning_for_AZ_6-17.pdf

National Integrated Drought Information System 2007, *National Integrated Drought Information System Implementation Plan*, NOAA.

NIDIS U.S. Drought Portal website is located at:
http://www.drought.gov/portal/server.pt/community/drought.gov/202

NOAA, NWS, Climate Prediction Center 2010, website located at:
http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

High Plains Regional Climate Center at: http://www.hprcc.unl.edu/maps.php?map=ACISClimateMaps

4.4.3 Flood / Flash Flood

Description

For the purpose of this Plan, the hazard of flooding addressed in this section will pertain to floods that result from precipitation/runoff related events. Other flooding due to dam or levee failures is addressed separately. The three seasonal atmospheric events that tend to trigger floods in Navajo County are:

- *Tropical Storm Remnants*: Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the State. These events occur infrequently and mostly in the early autumn and usually bring heavy and intense precipitation over large regions causing severe flooding.
- *Winter Rains*: Winter brings the threat of low intensity; but long duration rains covering large areas that cause extensive flooding and erosion, particularly when combined with snowmelt.
- *Summer Monsoons*: A third atmospheric condition that brings flooding to Arizona is the annual summer monsoon. In mid to late summer the monsoon winds bring humid subtropical air into the State. Solar heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. The thunderstorm rains are mostly translated into runoff and in some instances, the accumulation of runoff occurs very quickly resulting in a rapidly moving flood wave referred to as a flash flood. Flash floods tend to be localized and cause significant flooding of local watercourses.

Damaging floods in the County include riverine, sheet, alluvial fan, and local area flooding. Riverine flooding occurs along established watercourses when the bankfull capacity of a watercourse is exceeded by storm runoff or snowmelt and the overbank areas become inundated. Sheet flooding occurs in regionally low areas with little topographic relief that generate floodplains over a mile wide, Alluvial fan flooding is generally located on piedmont areas near the base of the local mountains and are characterized by multiple, highly unstable flow paths that can rapidly change during flooding events. Local area flooding is often the result of poorly designed or planned development wherein natural flowpaths are altered, blocked or obliterated, and localized ponding and conveyance problems result. Erosion is also often associated with damages due to flooding.

Another major flood hazard comes as a secondary impact of wildfires in the form of dramatically increased runoff from ordinary rainfall events that occur on newly burned watersheds. Denuding of the vegetative canopy and forest floor vegetation, and development of hydrophobic soils are the primary factors that contribute to the increased runoff. Canopy and floor level brushes and grasses intercept and store a significant volume of rainfall during a storm event. They also add to the overall watershed roughness which generally attenuates the ultimate peak discharges. Soils in a wildfire burn area can be rendered hydrophobic, which according the NRCS is the development of a thin layer of nearly impervious soil at or below the mineral soil surface that is the result of a waxy substance derived from plant material burned during a hot fire. The waxy substance penetrates into the soil as a gas and solidifies after it cools, forming a waxy coating around soil particles. Hydrophobic soils, in combination with a denuded watershed, will significantly increase the runoff potential, turning a routine annual rainfall event into a raging flood with drastically increased potential for soil erosion and mud and debris flows.

History

Navajo County has been part of several disaster declarations for flooding. From September 2010 to September 2016, according to the NCDC, there have been 17 flooding events in the County causing $40K in property damages. The following incidents represent examples of major flooding that has impacted the County:

- September 7, 2006, the President declared a Major Disaster Declaration (FEMA- 1660-DR-AZ) by approving Public Assistance for Pinal and Pima Counties, the Gila River Indian Community

within Pinal County and the Tohono O'odham Nation within Pima and Pinal Counties. His declaration was amended September 29, 2006 to include Gila, Graham, Greenlee and Navajo Counties, the tribal areas of the Hopi Tribe within Navajo County, the Navajo Nation within Navajo County and the San Carlos Apache Tribe within Gila, Graham and Pinal Counties. On November 9, 2006, the declaration was amended again to include the Navajo Nation within Apache and Coconino Counties.

- August 8, 2006, the Governor declared a state of emergency for a series of monsoon thunderstorms, spawning hail, damaging winds and flash floods throughout southeastern Arizona, specifically Pinal and Pima Counties from July 25-August 4, 2006. Areas of the Santa Cruz, San Pedro and Gila watersheds exceeded their 1993 flood stages in portions of Pinal, Pima, Cochise, Graham and Gila Counties. On September 13, 2006, the Governor amended the declaration to include Gila, Graham, Greenlee and Navajo Counties. Five Tribal Governments were also heavily impacted by the emergency: the Gila River Indian Community, the Hopi Tribe, the Navajo Nation, the San Carlos Apache Tribe and the Tohono O'odham Nation.
- February 17, 2005, the President declared a Major Disaster Declaration (FEMA- 1581-DR-AZ) for Public Assistance and Mitigation Programs for Coconino, Gila, Mohave, Navajo and Yavapai Counties and the Hopi and Navajo Nations. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. The Small Business Administration (SBA) declared an emergency for Mohave, Coconino, La Paz and Yavapai Counties, making low interest loans available to homeowners, renters, businesses of all sizes and private, non-profit organizations whose property was damaged or destroyed by the storms.
- December 29, 2005 the Governor declared a state of emergency for the Northern Arizona Winter Storm Emergency for Coconino County followed by 3 amendments on December 30, 2004 to include Yavapai County, on January 4, 2005 to include Gila and Navajo Counties and on January 11, 2005 to include Apache, Maricopa and Mohave Counties.
- Northern Arizona Winter Storm: Arizona was impacted by a series of strong winter storms December 28, 2004–January 12, 2005. Large amounts of rain and record levels of snow received during the initial storm were followed by January storms that tapped into warm, moist Pacific air. Rapid snow melt occurred as warm rains fell on snow at mid-level elevations, which, along with the rain falling on already saturated ground resulted in widespread flooding throughout the northern and central parts of the state. Arizona residents suffered both loss of life and property damage.
- January and February 1993, winter rain flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity, resulting in runoff being diverted to emergency spillways or breaching of the reservoir. Ultimately, the President declared a major federal disaster that freed federal funds for both public and private property losses for all of Arizona's fifteen counties. Damages were widespread and significant, impacting over 100 communities. Total public and private damages exceeded $400 million with eight deaths and 112 injuries reported to the Red Cross (FEMA, April 1, 1993; ADEM, March, 1998). The following are excerpts from the *Flood Damage Report, State of Arizona, Floods of 1993*, prepared by the USACE (USACE, 1994):
    - Navajo County experienced flood damages and problems as a result of flow in the Little Colorado River and tributary streams. A large portion of the county is comprised of land within the Navajo Nation. FEMA, FHWA, and SBA damages and

assistance totaled $4,005,748 for the 1993 flood events. Private damages in Navajo County are estimated to exceed $1,180,000, primarily residential and commercial damages and losses. 78 homes were destroyed or damaged, one business suffered major damage, and two businesses received lesser damage. Tourism dropped rapidly in the county, resulting in lost revenue to area hotels and other businesses. Public and private damages from the 1993 floods are estimated to exceed $4,100,000.

- In Winslow, a 345 foot long section of levee breached and flooded Ames Acres, Bushman Acres, and Winslow Plaza subdivisions. 284 homes and 900 people were evacuated 'for up to 3 days. 50 homes were flooded up to 4 feet deep. One business and one farm received damages. At McHood Park the recreational lake silted up. The Corps of Engineers repaired the breach during the flood at a cost of $350,050. The County continued reinforcing the breach, and working on 24 hour shifts.
- Clear Creek Reservoir south of Winslow experienced a large amount of sedimentation, losing about 70% of the reservoir capacity. Recreational use is expected to diminish, and fish and wildlife habitat was destroyed. The cost to remove the sediment was estimated at $750,000.
- In the Bird Springs/Leupp area, on the Navajo Reservation, the National Guard evacuated 11people by air. The road to Leupp was closed, greatly limiting access to the area. About 20 homes were flooded, livestock was lost, and water and power service interrupted. Navajo County provided emergency response and supplied 1500 sandbags. Navajo County assessed conditions on the Navajo and Hopi Reservations and responded to extremely muddy road conditions and stranded homeowners by providing coal and wood.
- In the Snowflake/Taylor area, Silver Creek overflowed its banks by a width of 65 to 100 feet. The elementary school received damage, 4 families were evacuated, 3 homes were flooded, numerous road crossings were underwater, and Shumway Bridge was overtopped. Many homes were sandbagged. At Snowflake, repairs to a flood control dike were made, and a parking lot sustained $20,000 damage. These extreme February flows were not experienced during the January flood.
- At Pinetop/Lakeside, there were over a dozen road closures and washouts. Flows up to two feet deep in Sky High Retreat subdivision cut off access to 45 homes. Two homes received minor damage.
- In Show Low, heavy flows on Show Low Lake Creek threatened closure of State Route 60 Bridge, the only access from Show Low to Globe. Flood waters came within 6 inches of the top of the bridge. The City of Show Low reported significant damage to sewer lines and a septic pump station. One home received major damage, and one home received minor damage. The high amount of runoff from Show Low and Pinetop necessitated water releases from Schoens Dam, a new flood control structure, to ensure a safe level of capacity to prevent catastrophic flooding in the event that Lone Pine Dam failed. Lone Pine Dam was damaged; the estimated cost of repairs was $30,000. At Lone Pine Dam, spillway flow was estimated at 6000 cfs.
- In Holbrook, flooding on Leroux Wash nearly inundated a wastewater lift station for the City of Holbrook. A radio station was off the air for two weeks.
- A landslide on State Route 260 resulted in closure for two days, causing major detours to get to Phoenix and Payson. Routes 277 and 377 were closed due to washouts for 3 days. The Atchison, Topeka & Santa Fe Railroad was impacted by the flood and experienced economic damages. Numerous roads were washed out in Sitgreaves

National Forest.

- The Joseph City Power Plant, on the Little Colorado River, incurred expenses for protecting power lines as a result of the river changing course.
- Navajo County officials stressed that flows in the Little Colorado had been attenuated by Lyman Lake Dam, upstream in Apache County. The normally full reservoir had been drained and repairs to the dam had just been completed prior to the flood events. The reservoir rapidly filled to capacity, and reduced peak flows through Holbrook, Winslow, and the Navajo Nation. If the lake had been full, flood flows in the Little Colorado would have been greater and caused more damage than was experienced.

- December 1978, following on the heels of major spring flooding, Arizona was hit hard again in December 16th-20th. Total precipitation ranged from less than 1 inch in the northeastern and far southwestern portions of Arizona to nearly 10 inches in the Mazatzal Mountains northeast of Phoenix. A large area of the central mountains received over 5 inches. The main stems of the Gila, Salt, Verde, Agua Fria, Bill Williams, and Little Colorado Rivers, as well as a number of major tributaries, experienced especially large discharges. The flooding areas with the most significant damages included the Little Hollywood District near Safford and major portions of Duncan, Clifton, Winslow, and Williams. Statewide - damages were estimated at $39,850,000 with severe damage to roads and bridges, 10 fatalities, and thousands left homeless. For Navajo County, public and private damages were estimated to exceed $4.1 million. ["Flood Damage Report, Phoenix Metropolitan Area, December 1978 Flood", November 1979, U.S. Army Corps of Engineers, FCDMC Library #802.027]

Although there have been no significant flood events in Navajo County during the last Plan cycle Navajo County Public Works Department officials recognized that significant erosion occurred in the Little Colorado River waterway directly impacting the Holbrook road yard. Repairs made to the bank erosion failed to fortify the property prompting the construction of a new Public Works facility south of the old road yard.

Probability and Magnitude

For the purposes of this Plan, the probability and magnitude of flood hazards in Navajo County jurisdictions are primarily based on the 1% (100-year) and 0.2% (500-year) probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs), plus any provisional floodplain delineations used for in-house purposes by participating jurisdictions or Planning Team delineated areas. The effective date for the new DFIRM maps is September 26, 2008. DFIRM floodplain GIS base files were obtained from FEMA and are the basis for the flood hazard depictions in this Plan. Therefore, the vulnerability analysis results in this plan are likely conservative.

Two designations of flood hazard are used. Any “A” zone is designated as a high hazard area. Medium flood hazard areas are all “Shaded X” zones. All “A” zones (e.g. – A, A1-99, AE, AH, AO, etc.) represent areas with a 1% probability of being flooded at a depth of one-foot or greater in any given year. All “Shaded X” zones represent areas with a 0.2% probability of being flooded at a depth of one-foot or greater in any given year. These two storms are often referred to as the 100-year and 500-year storm, respectively. High and medium hazard designations were also assigned to the non-FEMA areas by the Planning Team based on the anticipated level of flood hazard posed.

Vulnerability

Table 4-7: CPRI Rating for Flooding					
Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Holbrook	Likely	Limited	6 - 12 hours	< 24 hours	2.60
Pinetop-Lakeside	Likely	Limited	6 - 12 hours	< 24 hours	2.60
Show Low	Highly	Catastrophic	< 6 hours	< 24 hours	3.80
Snowflake	Highly	Critical	< 6 hours	< 1 week	3.60
Taylor	Highly	Critical	< 6 hours	< 24 hours	3.50
Winslow	Likely	Critical	6 - 12 hours	< 24 hours	3.10
Unincorporated Navajo County	Highly	Critical	12 - 24 hours	< 1 week	3.30

The potential exposure to high and medium flood hazards can be estimated using the flood mapping that follows. In areas of high current development or in areas where future development is likely the threat of flooding has been determined by FEMA.

Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude. It is unlikely that a storm event would occur that would flood all of the delineated high and medium flood hazard areas at the same time. Furthermore, it should be noted that any flood event that exposes assets or population to a medium hazard will also expose assets and populations to the high hazard flood zone. That is, the 100-year floodplain would be entirely inundated during a 500-year flood. All Navajo County Communities in this Plan are flood prone and are vulnerable to flooding. Flood damage can be immediate to infrastructure such as transportation, residential and commercial structures and critical facilities. However long term impacts include population relocation, economic hardships as business are impacted and a disruption the community as a whole.

The City of Holbrook is at risk of flooding according to the FEMA mapping. The majority of the community is protected with a levee on the Little Colorado River, which is the primary flooding Source. However localized heavy rain and flows in the river that exceed the levee design pose a threat to the community population of 5,094 citizens. The current FEMA mapping includes the levee and depicts the protection. If the levee were to fail Holbrook would be subject to inundation which would damage or destroy roads, homes, sewage pumping stations, and businesses in the inundation zone on the south side of Holbrook. Damage to the sewage pumping systems would cause a severe threat to public health. The Holbrook Senior Center, several retail businesses, restaurants, movie theater, local radio station and two banks are among the values at risk in this community. Disruption of tourism and retail sales due to road and business closures would seriously impact the economic health of the city. Flooding of the Senior Center would result in loss of vital public services for congregate meal and meals on wheels clients. The local schools, Park Elementary, Hulet Middle School, Holbrook Junior and High schools would be closed due to their proximity to the inundation zone and possible damage from flooding. The Navajo County Historic Courthouse built in the late 1800's is also at risk of damage due to a major flood event. The Navajo County fairgrounds lie just north of the railroad tracks and would be impacted from major flooding and the annual county fair event could be at risk if flooding were to occur in the Mid-September timeframe. Navajo County Sheriff's emergency dispatch is located just north of Hopi Blvd and would be subject to flooding thus jeopardizing the ability to conduct law enforcement activities and 911 dispatch out of the facility. Rail service would be disrupted and Amtrak passenger transportation would be delayed or disrupted due to a major flooding event. Without detailed analysis the complete extent of risk is unknown however the City can expect direct damages from the flood waters to residential structures, critical facilities, utilities and transportation. The rail line could be damaged. Interstate 40 runs parallel to the Little Colorado River in Holbrook and could be damaged or closed due to flooding. Such an occurrence would make Holbrook vulnerable to impacts from the road closure such as sheltering stranded motorists, and increased traffic. Navajo Blvd., which is part of Route 77, crosses the Little Colorado River in Holbrook. Increased flow

could damage or destroy this facility which is the main route south out of Holbrook.

The primary drainage that poses a flood hazard in Show Low is the Show Low Creek. The stream is crossed by State Route 60 in the commercial district of the Town. Several smaller drainages are also flood prone and are in residential areas. Flooding impact to State Route 60 could cut the main transportation route through the community and impact tourism and commuting, as well as the local businesses. Values at risk in the inundation zones include residential, retail businesses, medical facilities, hotel, financial institutions, and restaurants. Summit Regional Medical Center is located on State Route 260 so severe flooding would cause delays in transporting patients to the hospital. State Route 260 is also vulnerable since it parallels Show Low creek for much of its run through the community. Flooding in the residential areas will impact homes and could result in evacuations and displaced citizens. The Fool Hollow lake drains away from town and does poses a small threat to local residential areas from flooding. Heavy rains from monsoonal flooding during the summer tourist season will impact the economic balance of Show Low causing retail business to suffer losses thus reducing the sales tax revenue for the city.

There are FEMA Flood hazard areas along Walnut Creek and Billy Creek in Pinetop-Lakeside. The flooding areas are narrow and occur in residential areas and undeveloped areas. Hwy 260 parallels Billy Creek and could experience damages in high flows. Several businesses including restaurants, a bank, the senior center, and a supermarket are close to the floodplain and are vulnerable and loss of service will result in lost sales tax revenue and vital public services. Rainbow Lake is outside the community boundary, however if it were to fail portions of the community are vulnerable including a road crossing for Hwy 260 and a resort. Blue Ridge Middle School located on Porter Mountain Road lies due east of Billy Creek, flooding along the creek will hamper the transportation of students by bus and the walking path from the Billy Creek area to the school would be inaccessible. Navopache Electric Cooperative owns the property along from the corner of State Route 260 and maintains a storage yard with high value equipment along Billy Creek. Losses of this high value equipment is highly likely should Billy Creek flood its banks and impact to the customers of this electric commodity supplier would be impacted should electric service be compromised.

Silver Creek and its tributaries have identified FEMA Flood Hazard Areas. In Snowflake the floodplain is largely used for farming with some mixed residential areas and a golf course community that is built around the tributary stream bed. Portions of the downtown area and immediately surrounding residential areas are within the FEMA flood plain. These areas are on the fringe but are flood prone. Vulnerabilities include displaced citizens and disruption to travel and commerce. Route 77, Main Street in Snowflake crosses Cottonwood wash at the northern limit of the community, just south of the Silver Creek Confluence. This crossing is vulnerable to damage and closure due to flooding. Third Street crosses Cottonwood Wash as part of route 277 and is the main east thoroughfare in the community and is also vulnerable to damage or closure. Impacts to the community are closure and damage of State Route 277 and Snowflake Blvd. Excessive amounts of silt and debris will change the flow pattern of Silver Creek. Severe flooding and topping of the bridge on Silver Creek and Snowflake Blvd could result in damage and closure to this bridge crossing. There are two mobile home parks that are adjacent to Cottonwood Wash and are at risk to losses due to severe flooding. Copperstate Farms is a medical marijuana cultivation facility that lies west of Cottonwood Wash. Copperstate Farms, the Apache Railroad and several other businesses located in the industrial zone would be impacted due to severe flooding.

The FEMA flood zone for Taylor is shown on the same map as Snowflake due to their close proximity to one another. Silver Creek and Cottonwood Wash are the primary flood hazard in the community. Much of the floodplain is used for agriculture and with residential mixed in. The main commercial district abuts the floodplain and may be at risk to higher flows. State Route 77 parallels Silver Creek in Taylor and could be damaged in high flows. The area surrounding the intersection of Main Street (State Route 77) and Center Street has residential and commercial structures in and near the floodplain, these structure are vulnerable to flood and could result in economic distress and displaced residents. Additionally the Elementary school is at risk from flooding. This building is a valuable asset to the community for both education and potentially

as a shelter. The Silver Creek Senior Center, Our Lady of the Snow Catholic church and multipurpose building, Washington Academy Charter School, Northland Pioneer College, motels, restaurants, Walmart and several other retail businesses lie along the western edge of the Silver Creek from Belly Button to Taylor. Severe flooding events would impact these areas by disrupting retail sales, disrupting the delivery of vital services for congregates and meals on wheels clients and disrupting the ability of emergency vehicles to reach residents in low lying and flooded areas. Agriculture in the area would suffer losses with excessive flooding of seasonal crops such as alfalfa, sweet corn and silage.

The Little Colorado River is the primary flood hazard for Winslow. The FEMA Flood Hazard Area does not account for the levee as it has been decertified by FEMA, and shows considerable part of the City at risk of flooding. Notable roads that may be vulnerable to flooding are I-40, the Frontage Road, East 3rd Street and N. Park Drive. I-40 abuts the river directly, making it susceptible to damage from erosion or inundation. Road closures would impact the community directly and could result in traffic diversions, heavy traffic, stranded motorists and long term damage and repair to the road systems. Much of the north Eastern section of the city is vulnerable to flooding. These areas are municipal, residential and commercial and include two hospitals, Winslow High school Walmart, a new car dealership, hotels and restaurants and retail businesses. Winslow's sewage collection system is a gravity system with five lift stations that pump sewage from lower to higher elevations. All five pumps are within the 100 year flood zone and could be compromised if a significant flood event occurred. Raw sewage poses a serious health hazard to the population. If flooding were to occur the impact to the community could be extensive, displace residents and damage several critical facilities such as Little Colorado Medical Center and Indian Health Services. Loss of revenue due to disruption in retail sales and services would adversely affect the sales tax base and affect the financial health of the businesses and the city. Winslow is not equipped to provide temporary housing for displaced residents thus the economic structure of the community would be jeopardized. Interstate 40 being the main thoroughfare for interstate travel across country east to west would disrupt the timely delivery of goods and services and affect tourism which the City of Winslow relies upon for sales tax revenue. Tourism along Historic Route 66 would be impacted within the city limits.

Navajo County Unincorporated Areas

Flood vulnerabilities within the county unincorporated areas are found predominantly in the Northern two thirds of the county. These areas are lower and are subject to flooding from the mountain areas to the North. The Little Colorado River is the largest flood hazard in the community. Relatively low population density reduces the overall vulnerability of flooding in the non-incorporated areas. However the development is often clustered around potential flooding sources. Flooding along the Silver Creek will impact Taylor and Snowflake while flooding of the Little Colorado will impact both Holbrook and Winslow. These hazards will have county wide impacts. The impacts include the major transportation corridors, commercial districts, emergency and critical life safety facilities and services and residential areas.

NFIP and Repetitive Loss Properties

Flooding is the most common natural hazard in the United States. For much of history, the Nation dealt with the flood hazards ineffectively, and the brunt of the resulting property losses was borne by the American taxpayer. Finally, in 1968, Congress passed the National Flood Insurance Act, which eventually led to the creation of the National Flood Insurance Program (NFIP). The NFIP provided relief to taxpayers by transferring the cost of flood losses to the properties with the highest risk of flooding via flood insurance premiums. The program also provided these owners with financial aid post-flood, encouraged development outside of flood hazard zones, and required new and improved buildings to be constructed to be more resilient to flooding.

The NFIP offers flood insurance to communities that comply with minimum standards for floodplain management. The NFIP's Community Rating System (CRS) recognizes those community efforts to comply with the minimum standards. The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.

Communities participating in the CRS receive discounted flood insurance premium rates to reflect the reduced flood risk resulting from actions meeting the three goals of the CRS: reduce flood damage to insurable property; strengthen and support the insurance aspects of the NFIP; and encourage a comprehensive approach to floodplain management.

Navajo County and its respective jurisdictions are all actively participating in the NFIP and the following also participate in the CRS Program: Navajo County (class 8), Holbrook (class 7), and Show Low (class 8). The jurisdictions in this Plan are committed to continuing their participation in the NFIP by integrating and complying with the program requirements and actively mitigating the flood hazard.

As of November 30, 2016, Navajo County has 599 policies in force with 104 total losses and total payments of approximately $972,917.

Repetitive Loss (RL) properties are those NFIP-insured properties that since 1978 have experienced multiple flood losses. FEMA tracks RL property statistics, and in particular to identify Severe RL (SRL) properties. RL properties demonstrate a track record of repeated flooding for a certain location and are one element of the vulnerability analysis. RL properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records (provided by DEMA) indicate that there is one identified RL property in Navajo County, with a total of over $36,000 in associated building and contents value payments.

Table 4-8: Repetitive Loss Property Statistics

Jurisdiction	No. of Properties	Properties Mitigated	Total Payments
Snowflake	1	0	$36,518

Source: FEMA Region IX, (data as of February, 2017)

Navajo County Flood Warning System

The Navajo County Flood Warning System is made up of 29 sensors. These include rain and stream gages. Navajo County in cooperation with JE Fuller Engineering, have built a web application that displays the locations of the sensors and the reports past and current conditions and total rainfall accumulation. The Navajo County Flood Warning System allows County personnel to monitor in real-time the risk of a flooding event. The sensors are placed upstream of most of the hazards the county is aware of. In the event of excessive rainfall the county can mobilize resources and place then at critical road crossings, assist with sandbags, and clear debris from culverts.

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Development Trends

Most flood prone properties in Navajo County pre-date the planning jurisdictions' entry into the NFIP and were constructed prior to current floodplain management practices. The development of new properties or substantial re-development of existing structures is now subject to regulatory review procedures implemented by each jurisdiction. New development, adequate planning and regulatory tools are in place to regulate future development. For many areas within the county, challenges for the management of new growth include the need for master drainage planning and additional floodplain delineations to identify and

map the flood hazards within the growth areas where no mapping currently exists.

Sources

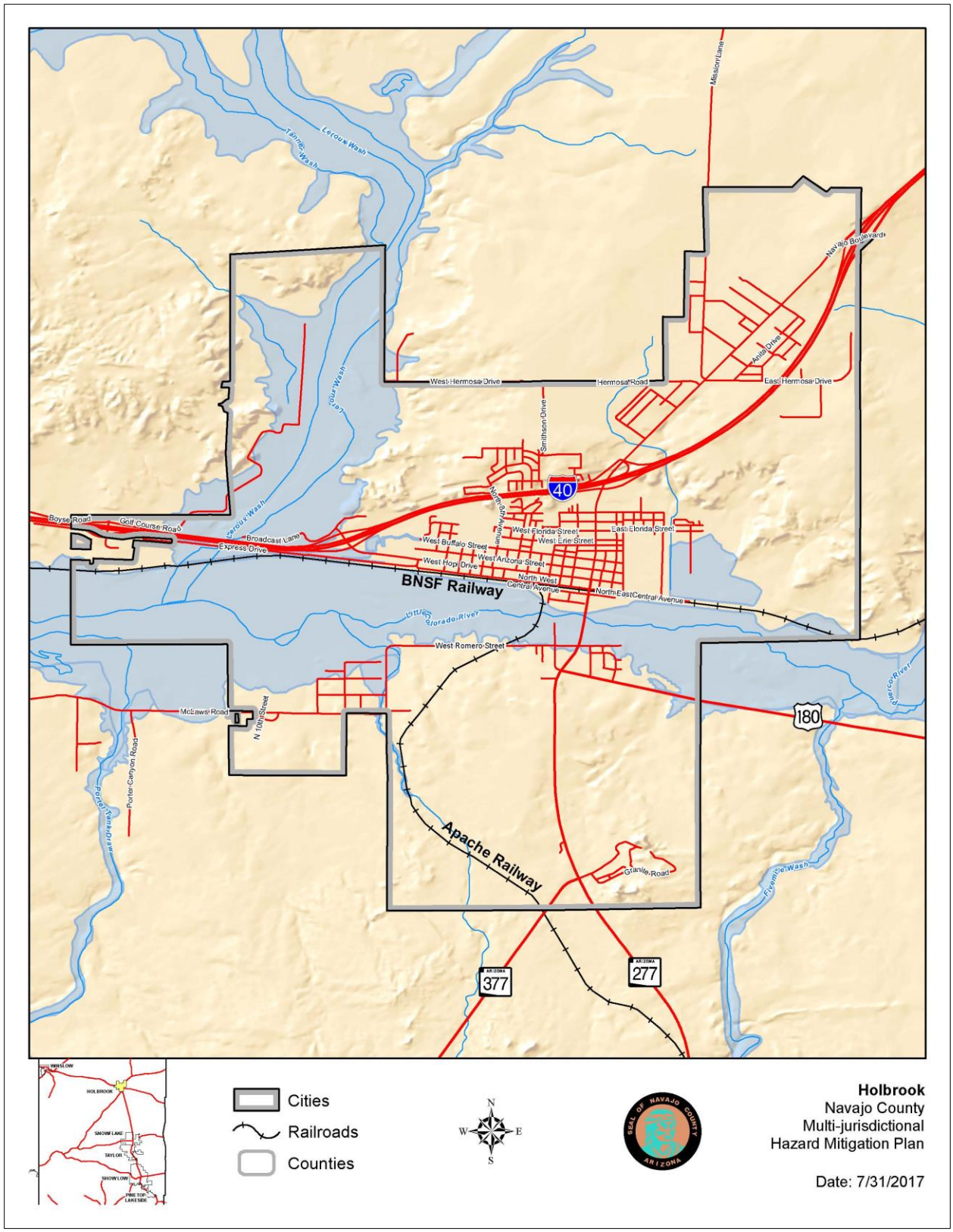
AZ Dept of Emergency and Military Affairs (DEMA), 2013, *State of AZ Hazard Mitigation Plan*.

FEMA, 2001, *Understanding Your Risks; Identifying Hazards and Estimating Losses*, Doc. 386-2.

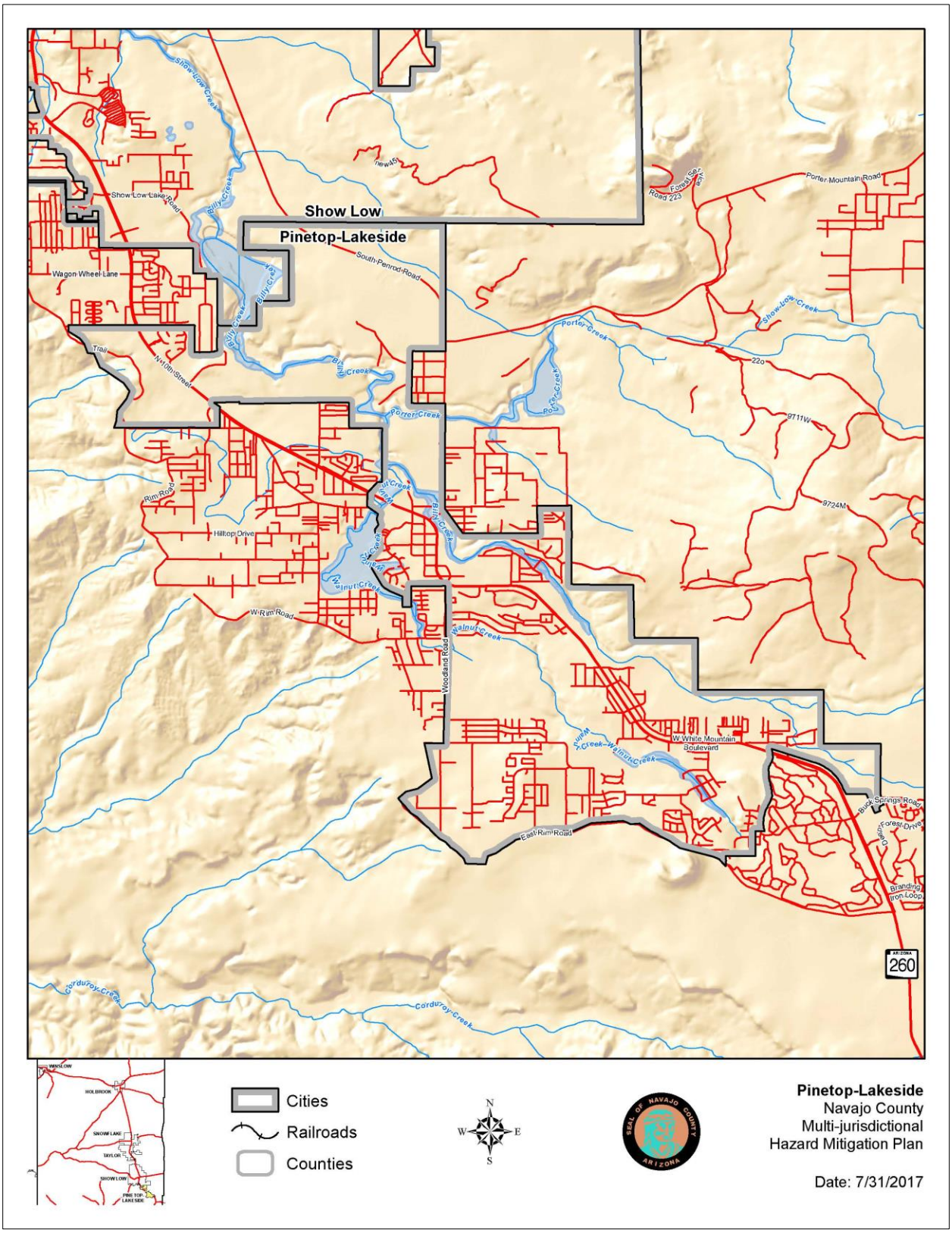
NOAA, National Weather Service Forecast Office – Tucson, 2011, website data accessed via the following URL: http://www.wrh.noaa.gov/twc/hydro/floodhis.php

U.S. Dept of Commerce, National Climatic Data Center, 2016, Storm Events Database, accessed via the following URL: https://www.ncdc.noaa.gov/stormevents/

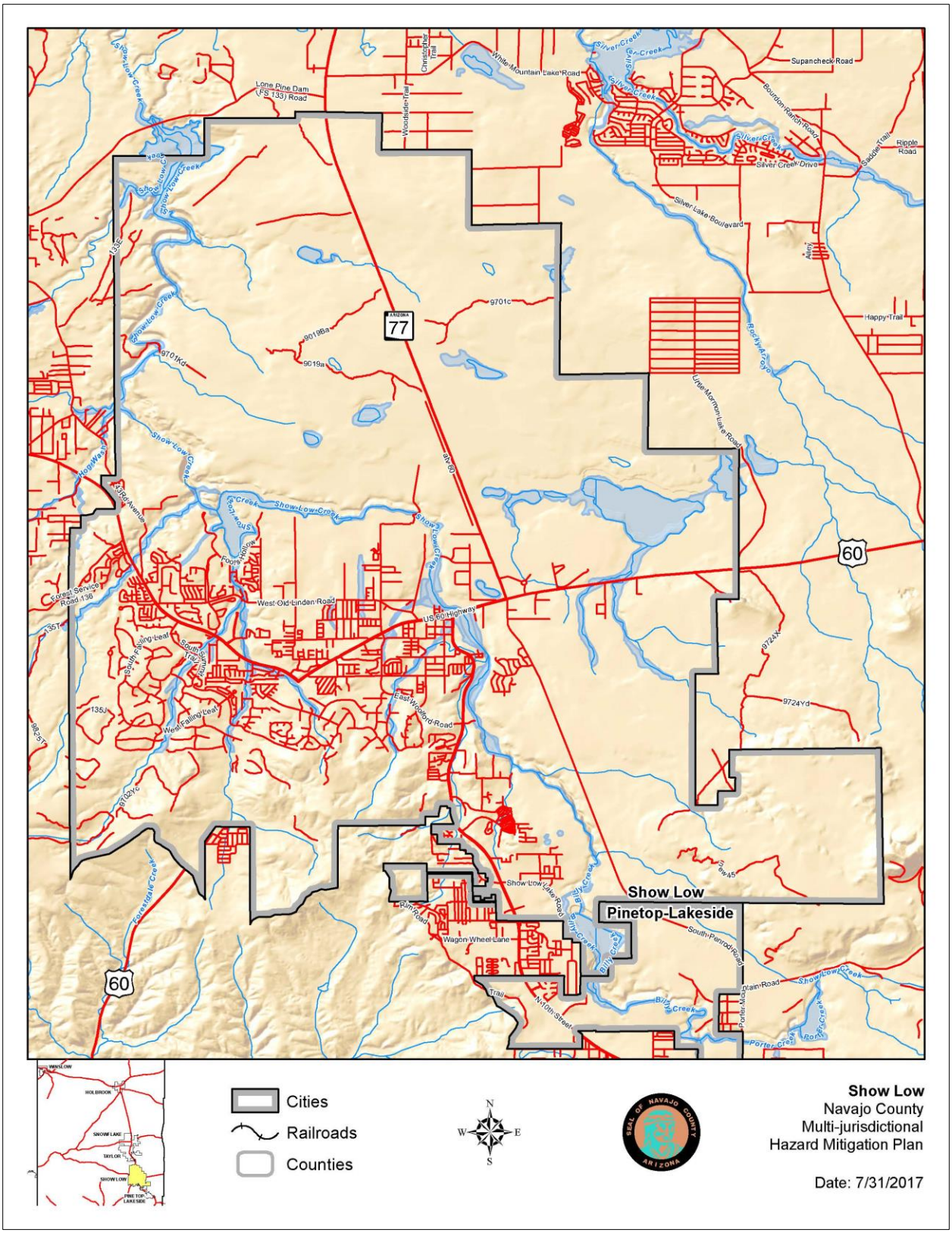
U.S. Army Corps of Engineers, Los Angeles District, 1994, *Flood Damage Report, State of Arizona, Floods of 1993*.



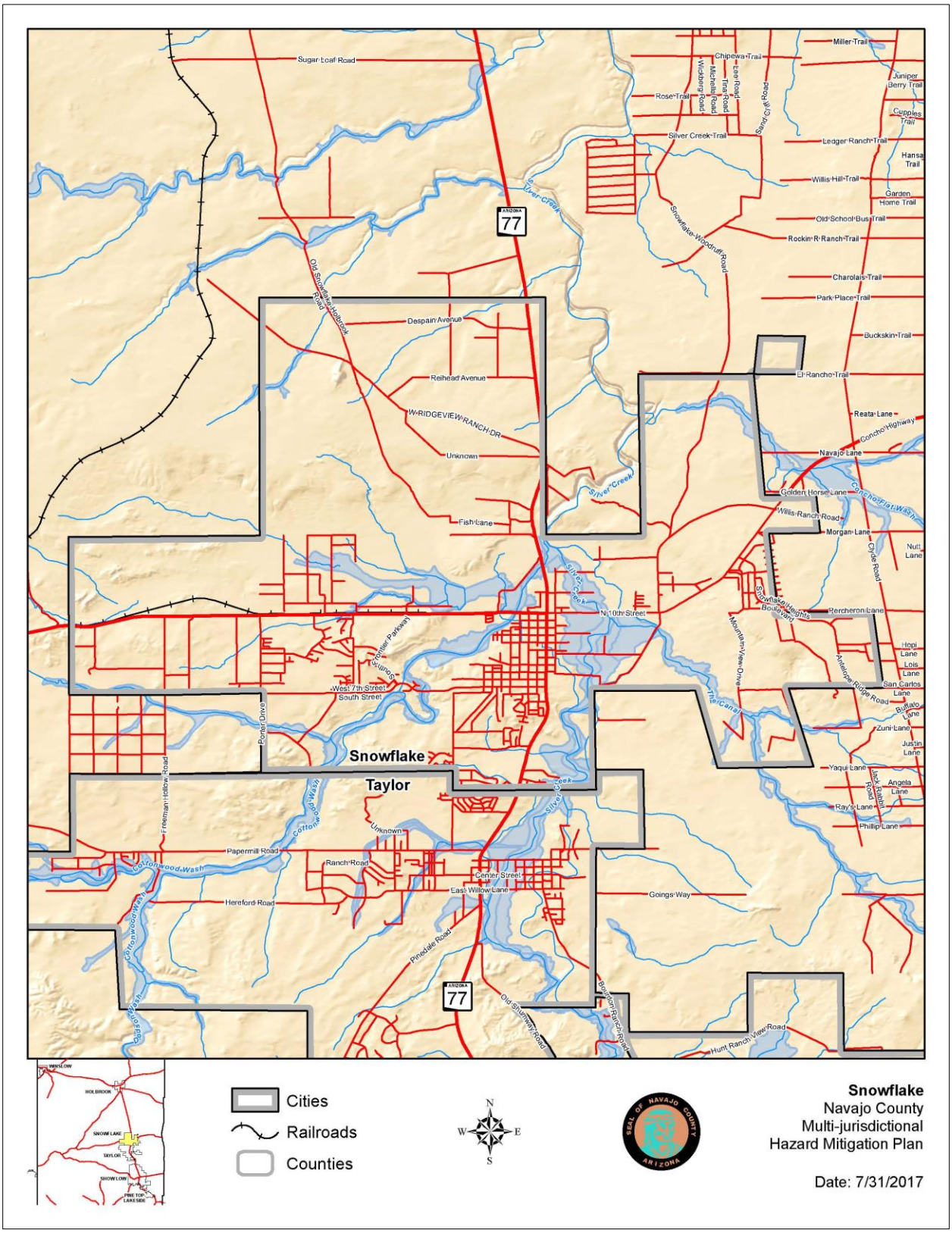
Map 4-1: Flood Hazard Areas, Holbrook



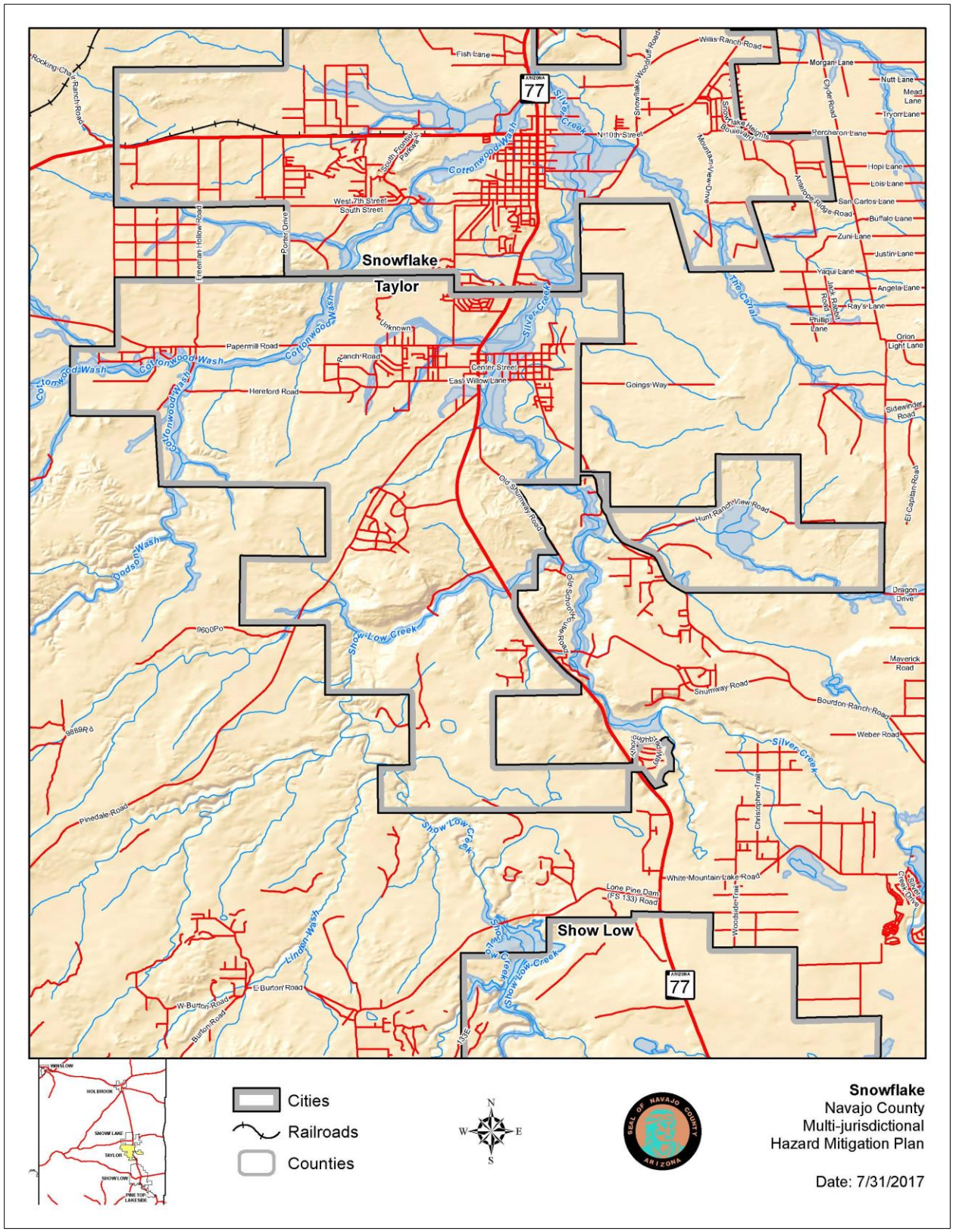
Map 4-2: Flood Hazard Areas, Pinetop-Lakeside



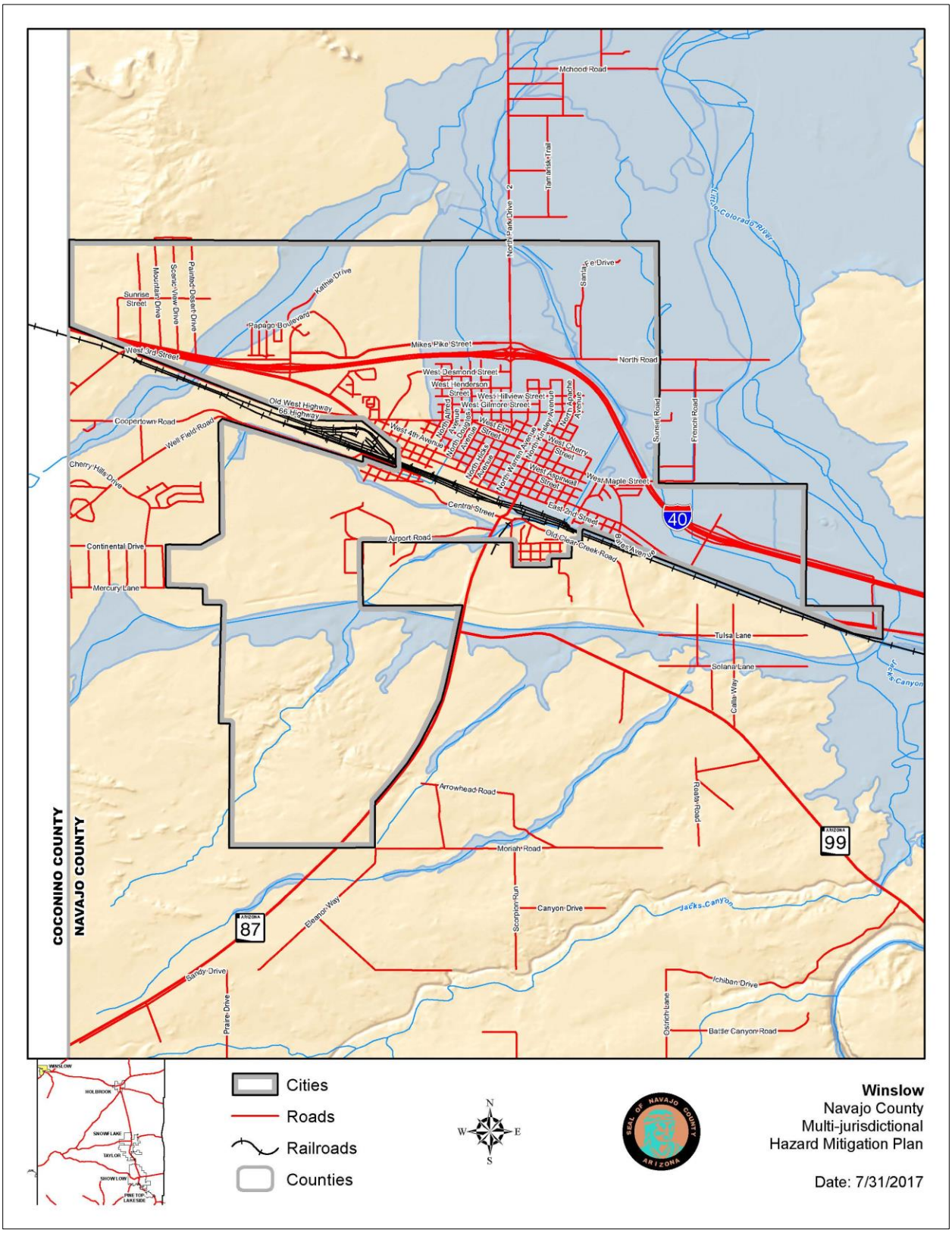
Map 4-3: Flood Hazard Areas, Show Low



Map 4-4: Flood Hazard Areas, Snowflake



Map 4-5: Flood Hazard Areas, Taylor



Map 4-6: Flood Hazard Areas, Winslow

4.4.4 Hazardous Materials Incidents

Description

The threat of exposure to hazardous materials (HazMat) in our modern society is prevalent nationwide and throughout Navajo County. HazMat incidents can occur from either point source spills or from transportation related accidents. In Navajo County, the primary areas of risk associated with hazardous materials incidents are located near or along Tier II facilities, major roads and rail lines, and pipelines that transport hazardous substances. These substances may be highly toxic, reactive, corrosive, flammable, explosive, radioactive or infectious, with potential to contaminate air, soil, and water resources and pose a serious risk to life, health, environment and property. HazMat incidents can result in the evacuation of a few people, a specific facility, or an entire neighborhood(s) depending on the size and magnitude of the release and environmental conditions.

The Arizona State Emergency Response Commission (AZSERC), established by Arizona Law (Arizona Revised Statutes-Title 26, Chapter 2, Article 3) is tasked with the implementation of the Emergency Planning and Community Right to Know Act (EPCRA) in Arizona. Local Emergency Planning Committees (LEPC) are appointed by AZSERC, as required by EPCRA, first to design, then to regularly review and update a comprehensive emergency plan for an emergency planning district. There are 15 LEPC's in Arizona - one in each county.

State statutes and Sections 311 and 312 of EPCRA set forth hazardous chemical storage reporting requirements and thresholds for facilities possessing hazardous materials. The legislation requires that facilities storing or producing hazardous materials in quantities that exceed a defined Threshold Planning Quantity (TPQ), submit an annual chemical inventory report (Tier II Hazardous Chemical Inventory Form) to AZSERC, the appropriate LEPC, and local fire department, by March 1 of each year. Facilities holding an Extremely Hazardous Substance (EHS) at quantities exceeding the Threshold Planning Quantities (TPQ) must provide the notifications as well as a representative to participate in the county emergency planning process.

For the purposes of this Plan, the Planning Team chose to focus only on those HazMat facilities and chemicals that are classified by the Environmental Protection Agency (EPA) as extremely hazardous substances (EHS) Typical EHS materials transported and stored routinely in the county include chlorine gas, sulphuric acid, and hydrogen fluoride.

History

There have been several non-declared HazMat incidents reported in Navajo County resulting in minimal injuries and damages. The National Response Center (NRC) received several dozens of calls regarding HazMat spills in Navajo County for fixed sites, mobile, rail lines, pipelines and aircraft. The following represent examples of HazMat incidents that have impacted the County:

- September 18, 2000, in Fort Apache it was discovered that students at the school secretly broke the tips off of many thermometers at the school over several weeks. Approximately 130 students and faculty have been exposed to mercury. Remedial action was taken to close the school and dorm areas. Testing was done and all contaminated clothing had been removed. (NRC, 2004).
- April 12, 2006, a caller in Joseph City reported an increase "SSI Increase" to a continuous release report. The cause of this "SSI Increase" or Shield Source Incorporated increase is due to an increase of fluorine in the coal. The material is releasing from four boilers stacks. The increase actually occurred sometime in June 2005, but the caller discovered the increase today at 1,650. The new range for this release is 1,493 pounds per day which use to be 707 pounds per day. The name of the material is hydrofluoric acid. (NRC, 2006)
- September 22, 2010, a caller reported that the county put oil down on Pinedale Road and 129 Road in a way that did not settle onto the roadway. As a result of heavy rain, the oil is releasing

into the watershed. The caller stated that when he spoke to officials they stated that the oil formula was not right and that they are in the process of placing sand on the spill. (NRC, 2010)

- February 3, 2015, a Navajo County Superior Court clerk found a white powdery substance on her hands after opening the mail and didn't know what it was. The AZ Dept of Public Safety HazMat Team from Phoenix was called to investigate and determined to be drywall dust.
- October 30, 2015, a drunk driver caused a fuel tanker to go off the side of the roadway on State Route 77 between Show Low and Taylor at milepost 346 rolling over and spilling between 2,000-4,000 gallons of unleaded fuel on the side of the highway.

Probability and Magnitude

There are no known probability statistics regarding HazMat incidents for Navajo County. The I-40 Commodity Flow Study (AMEC, 2004) identifies types and amounts of HazMat materials that are transported along the I-40 corridor by road and rail. No statistics were developed with this study, however.

Typically, the magnitude of impact from a Hazmat incident can be projected by using models such as ALOHA and CAMEO with assumed incident characteristics such as chemical type and source amount, spill location and amount, release time and rate, surface type, temperature, humidity, wind direction and speed, chemical stability factors. Those modeling efforts, however, are beyond the scope of this Plan.

The hazardous materials transported by rail have increased due to the domestic production and transportation of Bakkan shale oil across the country. Over 60 catastrophic freight rail accidents have occurred since 2012. The Burlington Northern Santa Fe rail line has contracted to this haul this highly flammable cargo which increases the probability that a rail accident along the I-40 corridor could occur and potentially affect populated cities such as Winslow and Holbrook.

Vulnerability

Table 4-9: CPRI Rating for HazMat

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Likely	Catastrophic	< 6 hours	< 24 hours	3.55
Pinetop-Lakeside	Possibly	Critical	< 6 hours	< 24 hours	2.70
Show Low	Possibly	Critical	< 6 hours	< 24 hours	2.60
Snowflake	Possibly	Critical	< 6 hours	< 1 week	2.70
Taylor	Possibly	Limited	< 6 hours	< 24 hours	2.30
Winslow	Likely	Catastrophic	6 - 12 hours	> 1 week	3.40
Unincorporated Navajo County	Likely	Critical	< 6 hours	< 24 hours	3.05

The 2011 plan calculated loss estimation utilizing HAZUS. In summary, $2.2 billion and $38 million in county-wide assets are exposed for High and Medium HazMat hazards, for all the participating jurisdictions in Navajo County. An additional $5.3 billion and $888 million in High and Medium exposure to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Navajo County jurisdictions. Regarding human vulnerability, 64% of the total population, is potentially exposed to a High hazard HazMat event. A total population of 10,228 people, or 10.5% of the total population, is potentially exposed to a Medium hazard HazMat event. It is recognized that EHS incidents typically occur in a single localized area and do not impact an entire county or community at one time. These numbers are intended to represent the collective community or county-wide exposure. Actual losses for an individual incident are likely to be only a fraction of the numbers presented here. Because of the nature of this hazard, structural damage is highly unlikely and decontamination costs related to replacements cost would only be a small fraction.

Residential, commercial and municipal properties are located in close proximity the BNSF rail lines. A

HazMat incident involving rail car tankers could affect the residents by putting them at risk for potential health hazards or evacuation, close businesses that are in close proximity to the incident, hamper the ability of the County and municipalities to conduct business at the normal service locations.

Development Trends

As the vulnerability analysis indicates, much of Navajo County is exposed to some level of EHS threat and this is primarily due to the fact that populations are generally located along the same major road and rail corridors that transport HAZMAT. That exposure will only worsen as development increases. It may be advantageous to pursue designating certain roadways as EHS corridors to limit the exposure, and establishing buffer zones along corridors known to be frequent EHS transport routes. Development of high-density population land uses such as schools, nursing homes, apartment complexes, etc., should be discouraged within these zones.

EHS facilities that have potential for critical or catastrophic HAZMAT releases should be located on flat topography and take advantage of positive airflow and protect against negative climate and microclimate conditions; utilize shading from excessive sun in warm climate and/or other best management practices.

Sources

http://earthjustice.org/features/map-crude-by-rail

AMEC Earth & Environmental, Inc., 2004, *Hazardous Material Commodity Flow Study, I-40 Corridor, Arterial Highways and Railway, Mohave, Coconino, Navajo and Apache Counties, Arizona.*

AZ Dept of Emergency and Military Affairs (DEMA) 2013, *State of Arizona Hazard Mitigation Plan.*

4.4.5 Levee Failure

Description

FEMA defines levees as man-made structures (usually earthen embankments) that are designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding (FEMA, 2009). National flood policy now recognizes the term "levee" to mean only those structures which were designed and constructed according to sound engineering practices, have up-to-date inspection records and current maintenance plans, and have been certified as to their technical soundness by a professional engineer or certain federal agencies. FEMA has classified all other structures that impound, divert, and/or otherwise impede the flow of runoff as "non-levee embankments". In Navajo County, these "non-levee embankments" might be comprised of features such as non-certified levees, roadway and railway embankments, canals, irrigation ditches and drains, and agricultural dikes. Currently there is no State or Federal Levee Safety Program and no official state or federal levee inventory. It is anticipated that FEMA will institute a National Levee Safety Program in the near future.

By design, a levee and many non-levee embankments increase the conveyance capacity of a watercourse by artificially creating a deeper channel through embankments that extend above the natural overbank elevation. Upon failure, floodwaters will return to the natural overbank areas. FEMA urges communities to recognize that all areas downstream of levees and embankments are at some risk of flooding and that there are no guarantees that a levee or embankment will not fail or breach if a large quantity of water collects upstream.

Mechanisms for levee failure are similar to those for dam failure. Failure by overtopping could occur due to an inadequate design capacity, sediment deposition and vegetation growth in the channel, subsidence, and/or a runoff that exceeds the design recurrence interval of the levee. Failure by piping could be due to embankment cracking, fissures, animal boroughs, embankment settling, or vegetal root penetrations.

History

Levees (certified or not) have been used in Navajo County for many years to protect communities and agricultural assets from flooding, as well as to facilitate the delivery and removal of irrigation water. These levees range from simple earthen embankments pushed up by small equipment to large engineered embankments lining one or both sides of a watercourse. The structural integrity of levees with regard to flood protection and policy has been discussed at a national level since the early 1980s but was elevated to a high priority after the collapse and breach of New Orleans' levees after Hurricane Katrina in 2005. In 2009, a draft report was issued to Congress by the National Committee on Levee Safety (NCLS, 2009) summarized recommendations and a strategic plan for implementation of a National Levee Safety Program.

The following are a few of the documented flooding events in which a breached dike or levee was involved:

- 1993, a 345 foot long section of Winslow levee breached by overtopping and flooded Ames Acres, Bushman Acres, and Winslow Plaza subdivisions. The resulting flooding inundated 204 parcels and 140 structures, and required the evacuation of 900 people for as long as 3 days. Fifty homes were flooded up to 4 feet deep. One business and one farm received damages. At McHood Park the recreational lake silted up. The Corps of Engineers repaired the breach during the flood at a cost of $350,050. Navajo County worked in 24-hour shifts to continue reinforcing the breach. (USACE, 1994 and NCDC, 2009).
- Late 2004, a piping failure developed through Winslow Levee and was believed to have been caused by desiccation cracks, root channels, rodent burrows, a structural flaw, and other factors. Emergency repairs to the levee were estimated at $75,000. (Navajo County BOS, 2005).

Since the last update of the Plan there have been no incidents of levee failure reported in the County.

Probability and Magnitude

There are varied probability or magnitude criteria regarding levee failure due to variability in levee design, ownership and maintenance. For flood protection credit under the NFIP, FEMA has established certain deterministic design criteria that are based on the 1% (100-year) storm event and corresponding minimum freeboard requirements. Federally constructed levees are usually designed for larger, more infrequent events such as the 0.04% and 0.02% probability (250 to 500 year) events plus freeboard. Recent recertification procedures proposed by U.S. Army Corps of Engineers, require that a certifiable levee have at least a 90% assurance of providing protection from overtopping by the 1% chance exceedance flood for all reaches of a levee system with a design freeboard height of at least three feet. For levees with more than three feet of design freeboard, the assurance is increased to 95%, and no certification will be made for levees with less than two feet of freeboard unless approved via a waver process. This assurance is only for containment (overtopping failure) and does not include probability of failure by other modes such as piping (USACE, 2007).

As of the writing of this Plan, the only FEMA certified levees within Navajo County is the Holbrook Levee along the Little Colorado River in Holbrook. The Ruby Wash Diversion Levee in Winslow has been decertified by the USACE. As of the writing of this Plan, planning and engineering efforts are underway to restore the levee, with construction planned to begin in 2021. The landside of the levee is delineated as a Shaded Zone X (500-year) and was chosen by the Planning Team to represent the High hazard levee failure limits. Risk associated with other non-certified dikes and levees are represented in Flooding profile and will not be duplicated here. The currently identified High hazard levee failure zones in Holbrook and Winslow are shown on the map at the end of this profile.

Vulnerability

Table 4-10: CPRI Rating for Levee Failure

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Possibly	Catastrophic	6 - 12 hours	> 1 week	2.95
Pinetop-Lakeside	Unlikely	Negligible	< 6 hours	< 6 hours	1.45
Show Low	Unlikely	Negligible	< 6 hours	< 6 hours	1.45
Snowflake	Unlikely	Critical	6 - 12 hours	< 1 week	2.10
Taylor	Possibly	Limited	< 6 hours	< 1 week	2.40
Winslow	Highly Likely	Catastrophic	6 - 12 hours	> 1 week	3.85
Unincorporated Navajo	Likely	Critical	12 - 24 hours	> 1 week	2.95

Vulnerability

There are no commonly accepted methods for estimating potential levee related losses. Many variables including storm size and duration, as well as size, speed, and timing at which a levee breach forms, all contribute to the potential for human and economic losses. Accordingly, no estimates of loss are made in this Plan. It is unlikely that a storm event would occur that would fail all of the levees at the same time. Vulnerabilities for each community protected by levees within Navajo County include damage and destruction of commercial and residential areas. Holbrook and Winslow have waste treatment operations that are located in the inundation zones which would pose serious public health hazards if damaged. Damage and destruction of roads and bridges would affect navigation and traffic delays and detours. Tourism would be affected and would impact the local economy of both Holbrook and Winslow. Values at risk are hospitals, schools, municipal infrastructure, utilities, roads and bridges, historic sites and buildings. Displacement of residents would disrupt business operations as many of the local commercial businesses are operated by local residents.

Development Trend Analysis

With the new focus on residual downstream risk for the land-side of levees and a general refocusing of national levee regulation and policy; it is likely that new and old developments in these areas will need to be revisited to determine if additional measures are necessary for adequate flood protection. Many structures located downstream of non-certified levee embankments are being re-mapped into Special Flood Hazard Zones. New developments should be evaluated to determine if sufficient protection is proposed to mitigate damages should the upstream structure fail.

New development in the areas protected by the Holbrook and Winslow levees will be limited; however, redevelopment of the area is possible. The best mitigation for this area is for structure owners to carry flood insurance and for the Holbrook and Winslow to perform routine maintenance and inspection of the existing levee facilities. Critical infrastructure facilities should not be dependent on Levees for protection. New facilities should be built away from the flood hazard, and existing facilities retrofitted with elevation or flood proofing.

Sources

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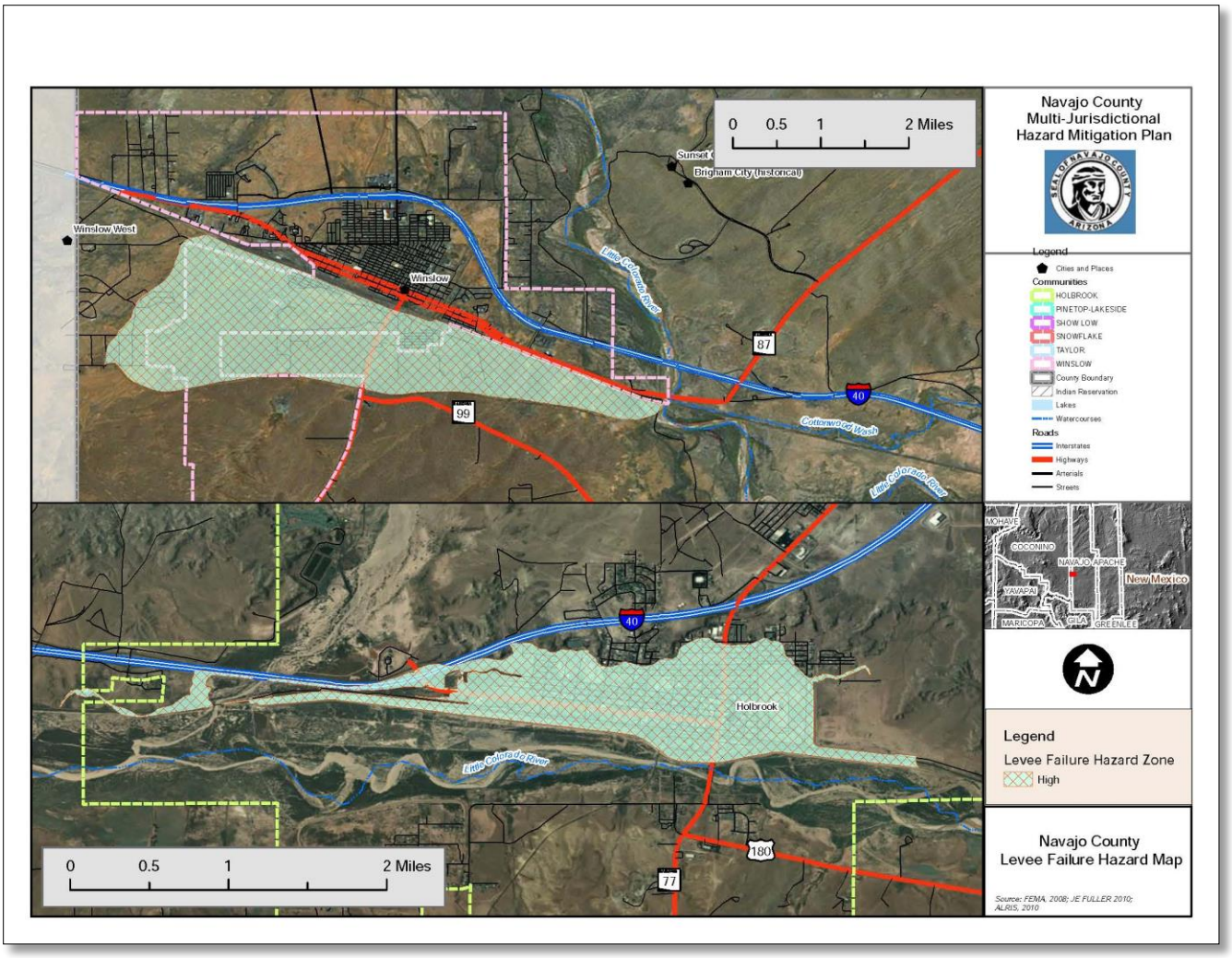


Map 4-7: Levee Failure Hazard for Navajo County

4.4.6 Severe Wind

Description

The hazard of severe wind encompasses all climatic events that produce damaging winds. For Navajo County, severe winds usually result from either extreme pressure gradients that usually occur in the spring and early summer months, or from thunderstorms. Thunderstorms can occur year-round and are usually associated with cold fronts in the winter, monsoon activity in the summer, and tropical storms in the late summer or early fall.

Three types of damaging wind related features typically accompany a thunderstorm; 1) downbursts, 2) straight line winds, and infrequently, 3) tornadoes.

Downbursts are columns of air moving rapidly downward through a thunderstorm. When the air reaches the ground, it spreads out in all directions, creating horizontal wind gusts of 80 mph or higher. Downburst winds have been measured as high as 140 mph. Some of the air curls back upward with the potential to generate a new thunderstorm cell. Downbursts are called macrobursts when the diameter is greater than 2.5 miles, and microbursts when the diameter is 2.5 miles or less. They can be either dry or wet downbursts, where the wet downburst contains precipitation that continues all the way down to the ground, while the precipitation in a dry downburst evaporates on the way to the ground, decreasing the air temperature and increasing the air speed. In a microburst the wind speeds are highest near the location where the downdraft reached the surface, and are reduced as they move outward due to the friction of objects at the surface. Typical damage from downbursts includes uprooted trees, downed power lines, mobile homes knocked off their foundations, block walls and fences blown down, and porches and awnings blown off homes.

Straight line winds are developed similar to downbursts, but are usually sustained for greater periods as a thunderstorm reaches the mature stage, traveling parallel to the ground surface at speeds of 75 mph or higher. These winds are frequently responsible for generating dust storms and sand storms, reducing visibility and creating hazardous driving conditions.

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most funnel clouds do not touch the ground, but when the lower tip of the funnel cloud touches the earth; it becomes a tornado and can cause extensive damage. For Navajo County, tornadoes are the least common severe wind to accompany a thunderstorm.

History

Navajo County has been subject to over numerous severe wind events meeting the criteria listed in Section 5.1, with a combined economic loss of over $30,000 to structures and agriculture in the last 20 years. In that same period, no deaths or injuries were reported throughout the County. In reality, severe wind events occur on a significantly more frequent basis throughout the county, but do not always have reported damages associated with every event. Because of the rural nature of Navajo County many wind events go unnoticed and do not pose a hazard, however the random nature of high wind events pose a danger to populated areas in the county. The following are examples of documented past events. Four instances have occurred in the last ten years:

- June 21, 2016 a tornado touched down east of Snowflake. The National Weather Service issued a tornado warning however no damages were reported.
- October 21, 2015 a tornado touched down in Cornfields on the Navajo Reservation. No reported damages.
- July 15, 2013 a spotter relayed that several people saw a tornado with thunderstorm activity touched down at the Winslow City Park.
- June 6, 2007, a roof blew off home on Colt Road, outside of Snowflake and landed on power lines. Fire department responded. (NCDC, 2010)

- October 18, 2005, a tornado was sighted in a sparsely populated area about 40 miles east- northeast of Cameron near the intersection of Dinnebito Wash, Highway 264, and the Coconino/Navajo County lines. One ranch did sustain minor damage to the house, the hogan, and the sweat lodge. Several outbuildings were totally destroyed and/or carried around 100 meters from their original locations. A 55-gallon drum filled with grain was found empty a few hundred meters from its original location. There was considerable damage to the tree only a few feet from the house, while little damage to the house occurred. Some farm animals were lost (9 chickens and 2 cats). The storm continued to travel north-northeast into Navajo County through a sparsely populated area. A semi-trailer was blown over on Highway 160 near the intersection of Route 564 and Navajo National Monument. Damages were reported to be $10,000. There were several reports of funnel clouds and tornados in the area (NCDC, 2010).

Tornado near Snowflake, 2007

- October 3, 2003, the public and Law Enforcement observed a tornado on the ground near White Cone. A spotter reported damage to a fence, windmill, and trees. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.) (NCDC, 2010).
- June 17, 2003, a weak tornado formed along a convergence zone about one mile west of Winslow. The tornado was nearly stationary and remained in rural areas for about 30 minutes. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kt.) Length=1mi. Width=10yds (NCDC, 2010).

Tornado in Cornfields, 2015

- September 16, 2001, a tornado touched down about 5 miles north of Snowflake. The tornado was first seen at 935 AM MST then a Sheriff Deputy watched the tornado until it lifted at 1003 AM MST. The tornado remained in a rural area and no damage was reported. Fujita Tornado Scale: F0 (40-72 mph / 35-62 kts.). Length=3mi. Width=1yd. (NCDC, 2010)
- April 23, 1997, wind damage in Dilkon believed to be caused by strong thunderstorm gusts blew over a trailer home. Several other trailers received minor damage. Broken windows were reported at the Dilkon Boarding School. No measured wind speed available. (NCDC, 2010).

Probability and Magnitude

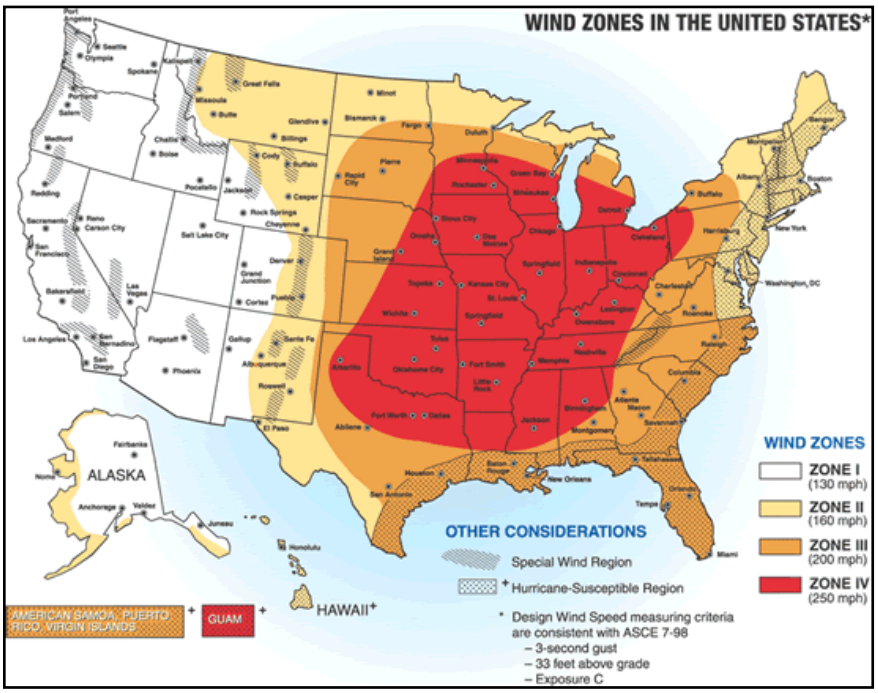
Most severe wind events are associated with thunderstorms as previously mentioned. The probability of a severe thunderstorm occurring with high velocity winds increases as the average duration and number of thunderstorm events increases. The average annual duration of thunderstorms in Navajo County ranges from 60-90 minutes and is among the longest in the nation (DEMA, 2004). Despite the long duration time, the actual number of thunderstorms on average varies from 50-70/year across the county.

Lightning strikes are another indicator of thunderstorm hazard. Strike densities across Navajo County vary from 4 to 8 lightning strikes per square kilometer annually.

The NWS issues a severe thunderstorm watch when conditions are favorable for the development of severe thunderstorms. The local NWS office considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind of 58 mph or higher, or tornadoes. When a watch is issued for a region, residents are encouraged to continue normal activities but should remain alert for signs of approaching storms, and continue to listen for weather forecasts and statements from the local NWS office. When a severe thunderstorm has been detected by weather radar or one has been reported by trained storm spotters, the local NWS office will issue a severe thunderstorm warning. A severe thunderstorm warning is an urgent message to the affected counties that a severe thunderstorm is imminent. The warning time provided by a severe thunderstorm watch may be on the order of hours, while a severe thunderstorm warning typically provides an hour or less warning time.

The American Society of Civil Engineers (ASCE) has identified a 3-second wind gust speed as the most accurate measure for identifying the potential for damage to structures, and is recommended as a design standard for wind loading. Most of Arizona and all of Navajo County is designated with a design 3-second gust wind speed of 90 mph, indicating relatively low risk from severe winds (ASCE, 1999).

Likewise, FEMA identifies most of the county to be in design wind speed Zone I. In this zone, a design wind speed of 130 mph is recommended for the design and construction of community shelters. A small portion of the Navajo Nation is identified as a "Special Wind Region" and should be evaluated independently for design wind speeds.



Source:: http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

Figure 4-8: FEMA Wind Zones

Based on historic records, the probability of tornados occurring in Navajo County is likely. Tornado damage severity is measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, with the letter F preceding the number (e.g., FO, F1, F2). Most tornadoes last less than 30 minutes, but some last for over an hour. The path of a tornado can range from a few hundred feet to miles. The width of a tornado may range from tens of yards to more than a quarter of a mile.

Table 4-11: Fujita Tornado Scale

Category	Wind Speed (MPH)	Description of Damage
F0	40-72	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.
Source: FEMA, 1997.		

Vulnerability

Table 4-12: CPRI Rating for Severe Wind

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Pinetop-Lakeside	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Show Low	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Snowflake	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Taylor	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Winslow	Highly Likely	Critical	> 6 hours	< 6 hours	3.40
Unincorporated Navajo County	Highly Likely	Critical	> 6 hours	< 6 hours	3.40

There is a significant difference between the hazard rating for Severe Wind in this Plan and the previous Plan. This is largely due to having different representation on this Plan's Planning Team as opposed to the last Planning Team. In addition, the Planning Team agrees that the entire County has nearly the same exposure to the hazard although there have not been a large number of significant events that have caused damage since the last Plan.

The entire County is assumed to be equally exposed to the damage risks associated with severe winds. Typically, incidents are fairly localized and damages associated with individual events are relatively small. Based on the historic record over the last five years, it is feasible to expect average annual losses of $100,000 or more (county-wide). Each community has significant values at risk for severe wind events including residential neighborhoods, retail businesses, utility and communication infrastructure, airports, medical facilities, and water and wastewater facilities. Utility infrastructure includes Arizona Public Service and Tucson Electric Power transmission lines that span across the county from the I-40 corridor and south to Snowflake, Taylor and Show Low. The private wind power generator at the Dry Lake Facility, Iberdrola Renewables has 30 wind turbines that provide alternative energy to over 15,000 homes in the Phoenix metropolitan area. Navopache Electric Cooperative is another power supplier to much of the southern portion of Navajo County including all of the White Mountain Apache Reservation. A microburst, tornado or other high wind event can disrupt any of the electric power systems in Navajo County and cause outages

for hours or days. The impact of a power loss for any given area could cause residents to seek mass care shelter, disrupt business and impact the local economy. Loss of cell towers and communications infrastructure must be considered due to the lack of redundant communications systems in rural Navajo County. Most businesses conduct transactions through Internet and disruption to the communication infrastructure would halt transactions which includes retail, banking, medical, educational and governmental organizations. Emergency services would be impacted and would have to rely on back up communications to provide vital services to the impacted communities.

Development Trend Analysis

Future development will expand the exposure of life and property to the damaging effects of severe wind events. Enforcement and/or implementation of modern building codes to regulate new developments in conjunction with public education on how to respond to severe wind conditions are arguably the best way to mitigate against losses.

Sources

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4.4.7 Wildfire

Description

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties.

The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources and personal property, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may temporarily lose its capability to absorb moisture and support life. Exposed soils in denuded watersheds erode quickly and are easily transported to rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

History

The County has experienced several large fires in recent history, with the latest burning 46,000 acres in 2016. These events are discussed below.

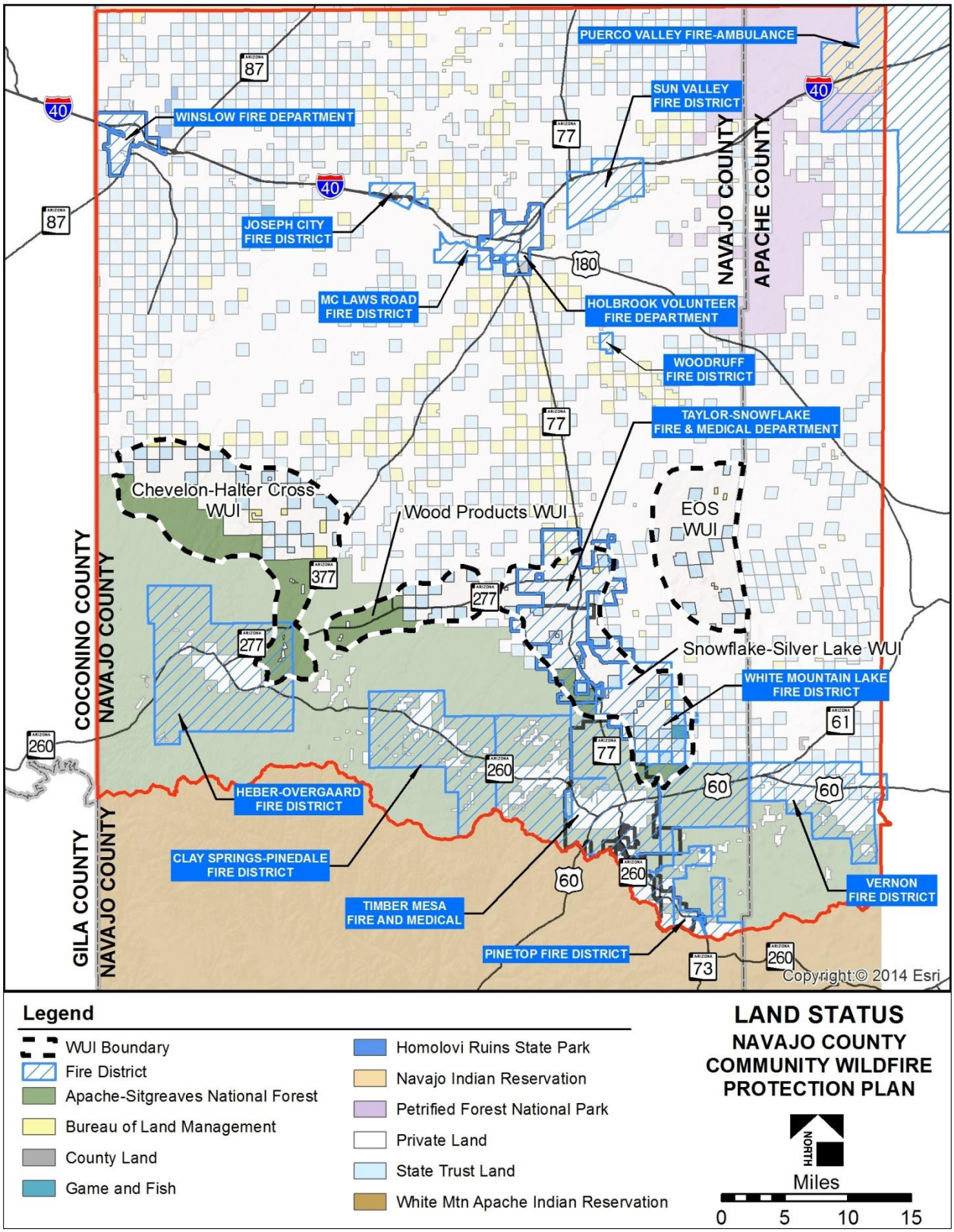
- June 15, 2016, the Cedar Fire started southwest of Show Low; the fire burned north-northeast and east for three days for a total of approximately 13,000 acres. Four days later, strong northeast winds caused the fire to jump containment lines and burn 14,000 acres in one day. This was also one of the hottest days recorded with 10-15 degrees above average for the day. Total acres burned from this event were about 46,000 (NCDC, 2016).
- June 2006, the Potato Complex Fire, lightning caused fire that burned an area 10 miles northwest of Heber-Overgaard. The fire started June 6, 2006 and burned 6,262 acres with over $3,706,000 in fire suppression costs (NICC, 2010).
- August 2003, the Red Knoll Fire, a lightning caused fire that burned an area 5 miles east of Carrizo. The fire started August 9, 2003 and burned 186 acres with over $116,400 in fire suppression costs (NICC, 2010).
- June 19, 2002 the Governor proclaimed an emergency for Navajo and Apache Counties for damages due to the Rodeo Fire. The Rodeo Fire ignited in Navajo County near the Town of Cibecue on the Fort Apache Indian Reservation June 18, 2002. Federal and State fire suppression resources responded, numerous homes and public infrastructure were threatened. On July 1, 2002 the Governor amended her proclamation to include Gila and Coconino Counties due to the Chediski Fire. The Chediski Fire ignited in Navajo County near the Chediski Mountain on the Fort Apache Indian Reservation June 20, 2002, endangering up to 4,500 homes and causing the evacuation of more than 2,000 people. The Presidential disaster declaration was received on June 25, 2002. Apache and Navajo Counties were declared for Public Assistance, as well as the Fort Apache Indian Reservation. Apache, Coconino, Gila and Navajo Counties were given Individual Assistance. Mitigation Assistance was granted statewide. The Rodeo-Chediski fire burned 468,640 acres and destroyed more than 450 houses in Navajo, Apache, Coconino and Gila counties and the Fort Apache Indian Reservation. Disaster aid to Arizona in the wake of the massive Rodeo-Chediski fire has topped $26 million. To date, 8,204 Arizonans have registered for assistance through FEMA's toll-free registration line. Help Centers have seen 5,720 people seeking information about disaster aid, including answers to questions about their applications for assistance. (NICC, 2010) The state costs were $1,418,717 and the federal costs were $1,093,574.
- June 1999, the Rainbow Fire burned in Navajo and Gila counties. As of Saturday, June 12, the fire

had consumed up to 5,000 acres on the Whiteriver Indian Reservation. The fire was threatening the towns of White River, Pinetop, Lakeside and Show Low. Local officials report 15 homes have been destroyed on the reservation along with 13 other outlying structures. Approximately 100 people were evacuated along with a community hospital. In Pinetop, the fire threatened 2,000 homes and 30 businesses. No injuries associated with the fire have been reported. The American Red Cross (ARC) opened a shelter on the White River Reservation to house 150 people. Two ARC Emergency Response Vehicles were deployed to provide meals. (ADEM, 2010). State costs were $185,774.

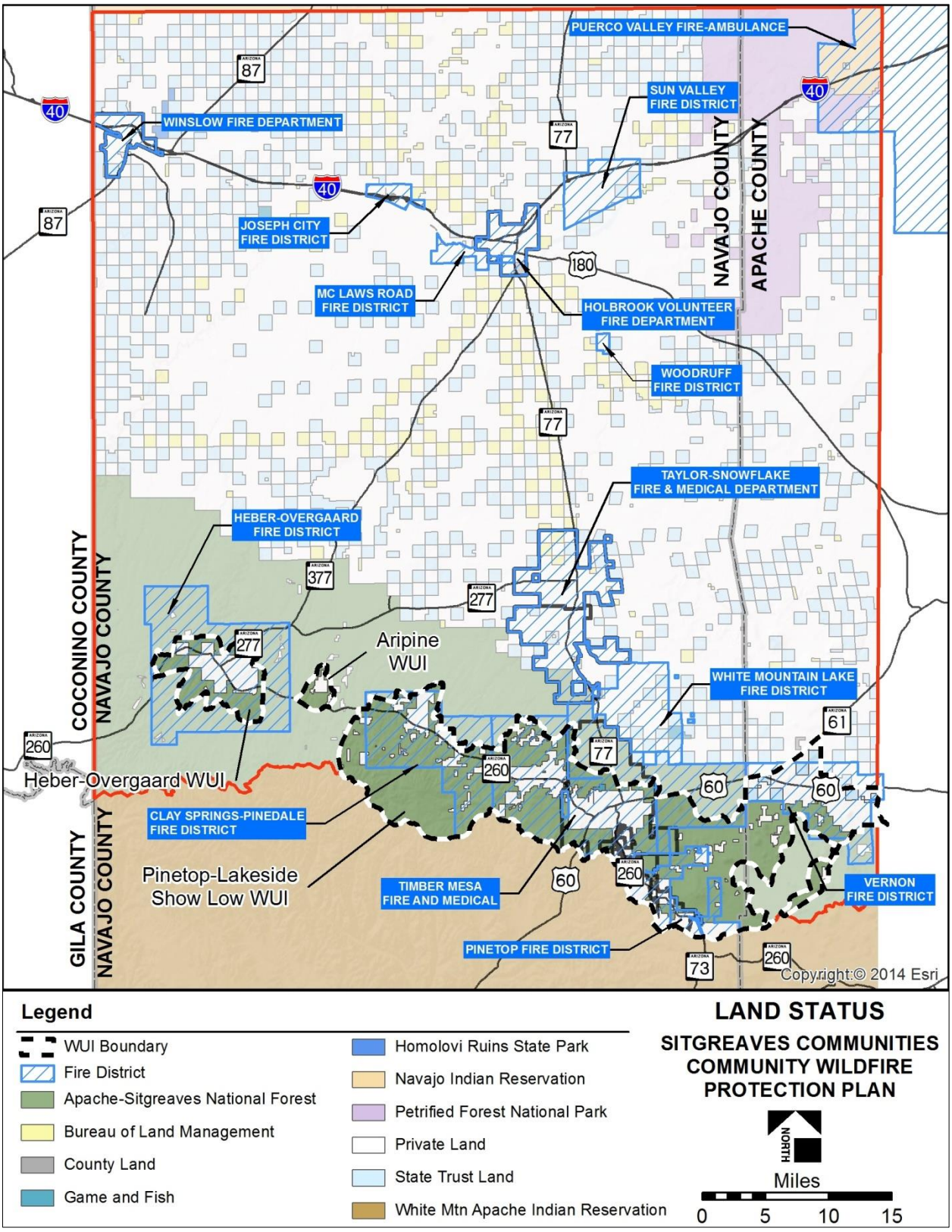
Probability and Magnitude

The probability and magnitude of wildfire incidents for Navajo County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic aspect and slope, and remoteness of area. Wildland Urban Interface (WUI) maps were developed as part of this Plan to highlight areas where the greatest risk in terms of development is located.

Navajo County and various cooperating stakeholders collaborated to update the Central Navajo County Community and the Sitgreaves Communities Wildfire Protection Plans. Both documents verified the Wildland Urban Interface (WUI) areas for Navajo County study area and mapped various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior treatment areas.



Map 4-8: Land Status, Navajo County



Map 4-9: Land Status, Sitgreaves Communities

Vulnerability

Table 4-13: CPRI Rating for Wildfire					
Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Holbrook	Possibly	Limited	< 6 hours	> 1 week	2.50
Pinetop-Lakeside	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Show Low	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Snowflake	Possibly	Limited	< 6 hours	> 1 week	2.50
Taylor	Possibly	Limited	< 6 hours	> 1 week	2.50
Winslow	Possibly	Limited	< 6 hours	> 1 week	2.50
Unincorporated Navajo County	Highly Likely	Catastrophic	< 6 hours	> 1 week	3.85

The 2011 plan estimated loss at, $126.2 and $13 million in asset related losses are estimated for high and medium wildfire hazards, for all the participating jurisdictions in Navajo County. An additional $783 and $106.9 million in high and medium hazard wildfire losses to residential, commercial, and industrial facilities is estimated for all participating Navajo County jurisdictions. It should be noted that these exposure dollar amounts do not include the cost of wildfire suppression which can be substantial. For example, a Type 1 wildfire fighter crew costs about $1 million per day.

Regarding human vulnerability, a county-wide percentage population 35.51% and 37.20%, is potentially exposed to a high and medium hazard wildfire event, respectively. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas. Vulnerability to the communities in Navajo County includes the displacement of year round residents and seasonal visitors due to the threat of a wildfire. Wildfire season occurs at the height of tourism season in Navajo County therefore a significant wildfire affects the economic health of the communities. The communities of White Mountain Lakes, Clay Springs, Pinedale, Heber-Overgaard, Show Low, Pinetop-Lakeside, and many communities within the White Mountain Apache Reservation are the most vulnerable to wildfire. The adverse health effects from smoke and ash from a wildfire can affect other communities not in the direct path of the wildfire. Many communities have limited ingress and egress so evacuations can be problematic during a swiftly moving wildfire. The prevailing winds tend to push the fires from the southwest to the northeast and in past occurrences such as the Rodeo-Chedeski Fire limited the major highway evacuation routes. In some of the WUI areas there is high density of homes and businesses that may be difficult to defend against a wildfire due to the lack of infrastructure, too dense vegetation and steep terrain. The Ponderosa Pine forests in Navajo County are a natural resource that draws visitors escaping the summer heat of the Phoenix metropolitan valley and are also a major industry to the White Mountain Apache Tribe. The recent Cedar Fire in June 2016 threatened a large commercial timber sale south of Pinetop-Lakeside. The burn scars from major wildfires also increase the risk of post fire flooding to residents, businesses and infrastructure downstream and can disrupt or destroy the natural watershed. The devastating effects of a major wildfire can be felt for many years after by the obliteration of a pristine pine forest.

Development Trend Analysis

The WUI represents the fringe of urban development as it intersects with the natural environment. As previously discussed, wildfire risks are significant for a sizeable portion of the county. Any future development will only increase the WUI areas and expand the potential exposure of structures to wildfire hazards. The Central Navajo Community and Sitgreaves Communities Wildfire Protection Plans address mitigation opportunities for expanding WUI areas and provide recommended guidelines for safe building

and land-use practices in wildfire hazard areas. Reducing the risk within the WUI's is a major concern for local fire agencies and establishing Fire Adapted Communities is a priority for these agencies when working with private land owners to protect their properties by engaging in Firewise activities.

Sources

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4.4.8 Winter Storm

Description

Severe winter storms affect many aspects of life in the county including; transportation, emergency services, utilities, agriculture and the supply of basic subsistence to isolated communities. Interstates 40 and State Roads have produced numerous fatal multi-car accidents due to heavy winter snowfall and icy road conditions. Heavy snowfalls can also leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon-monoxide poisoning. Significant winter storms can also hinder both ground and air emergency services vehicles from responding to accidents or other emergencies. Remote areas and communities can be easily cut-off from basic resources such as food, water, electricity, and fuel for extended periods during a heavy storm. Extremely heavy snow storms can produce excessive snow loads that can cause structural damage to under-designed buildings. Agricultural livestock can also be vulnerable to exposure and starvation during heavy winter storms.

Freezing Rain is formed as snow falls through a warm zone in the atmosphere completely melting the snow. The melted snow then passes through another zone of cool air "super cooling" the rain below freezing temperature while still in a liquid state. The rain then instantly freezes when it comes in contact with the ground or other solid object. Because freezing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Sleet is similar to hail in appearance but is formed through atmospheric conditions more like Freezing Rain. The difference is the snowflakes don't completely thaw through the warm zone and then freeze through the cool air zone closer to the ground. Sleet typically bounces as it hits a surface similar to hail. Sleet is also informally used to describe a mixture of rain and snow and is sometimes used to describe the icy coating on trees and power lines.

Sleet and freezing rain can cause slippery roadway surfaces and poor visibility leading to traffic accidents, and can leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon monoxide poisoning. Heavy sleet or freezing rain can produce excessive ice-loads on power lines, telecommunication lines and other communication towers, tree limbs, and buildings causing power outages, communication disruptions, and other structural damage to under-designed facilities.

History

Winter snows are the lifeblood of water supplies for most of Navajo County. They can also, however, be a deadly hazard. For this update, there have been no reported incidents of severe winter storms for the County. The following are highlights of the more prominent snow storm events impacting Navajo County:

- January 2010 a Winter Storm Emergency was declared: About 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Strong gusty winds also affected many valley locations during the evening hours of the 19th and the early morning hours of the 20th. Heavy snow fell along the Eastern Mogollon Rim. Snowfall totals for this one storm include: Clints Well 16 inches, Heber 13 inches, Clay Springs 14-15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to 5,000-5,500 feet elevation by the storm moved east. The Governor declared an emergency and released $200,000 for emergency responses and recovery expenses from the weather events. Declared that a State of Emergency in Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai Counties due to the 2010 Winter Storm beginning January 21, 2010. The President approved the request for Emergency Declaration in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, has complicated delivery of assistance like fuel, food and medical provisions. An additional $1

million was approved by the Governor to cover state-share costs. Response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, and 5,475 blankets and over 800 wood bundles were delivered by air and ground transport. (ADEM, 2010, FEMA, 2010)

- February 2005 a severe winter storm and flood occurred which on February 16, 2005 the Governor declared a state of emergency due to the February 2005 Winter Storms and Flooding throughout central and eastern Arizona. Gila, Graham, Greenlee, Pinal and Yavapai Counties and the Town of Wickenburg (Maricopa County) all declared and were included in the Governor's declaration. On March 8, 2005, the declaration was amended to include all of Maricopa County and Mohave County.

- January 1997, one the largest snow storms of the decade brought heavy snow to most of northern Arizona. Heavy snow fell from early Sunday morning, the 12th and through the 14th. Four deaths from exposure occurred during, or immediately after the storm, on the Navajo Nation Reservation and were directly related to this catastrophic winter storm. Following the storm, National Guard trucks and helicopters were needed to evacuate people on the Navajo Nation who required medical attention due to chronic medical problems and who were unable to obtain needed medication. National Guard helicopters also dropped food to people and livestock who were stranded for several days following the storm. Unofficial snow accumulations up to 6 feet were reported along the Mogollon Rim in extreme southeastern Coconino County and western Navajo County. Very strong winds created drifts as high as 10 feet at many wind-prone areas across northern Arizona. Numerous trees fell on cars, houses and roads causing power outages and property damage. Hundreds of miles of major highways were closed mainly along the Mogollon Rim and the White Mountains area. Interstate 40 from Winslow to Ashfork were closed from noon Monday, Jan. 13 through 6 am MST, Wednesday, Jan. 15. Over 200 vehicles were stranded on these two highways. The heavy snow in Flagstaff caused Northern Arizona University to close for the first time in 20 years. Flagstaff public schools were closed for five days. This was the 12th biggest snow storm in Flagstaff's 100 years of weather records. (ADEM, 2009; NCDC, 2010)

- December 1967 to January of 1968, the worst winter storm to impact Navajo County occurred paralyzing northern Arizona and brought snow to much of the state. It was actually two storms, with the second following closely on the heels of the first. However, at that time, most perceived it as one storm. On December 14, a state record of 38.0 inches fell at the Heber Ranger Station. Snowfall totals of the Rim Country included 102.7 inches at Hawley Lake, 99 inches at Greer, and 9.5 inches at the Heber Ranger Station, The Navajo Nation was extremely hard hit as two to three feet of snow fell across the community. Window Rock measured 33.5 inches. People on the reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Eight people died of exposure. The total disaster cost to the State of Arizona was $466,470. (DEMA, 2010)

Probability and Magnitude

Communities located in Navajo County can expect an annual snowfall of at least 22 inches at elevations above 6,000 feet. Snowfall totals increases when the El Nino weather pattern is present such was the case in January 2010 when Pinetop-Lakeside received over 51 inches, Heber-Overgaard received over 47 inches and Show Low received over 32 inches. Since the El Nino weather pattern is cyclical the probability of a severe weather event occurring in the future is highly likely.

Vulnerability

Table 4-14: CPRI Rating for Winter Storm

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Holbrook	Possibly	Limited	6 - 12 hours	< 1week	1.95
Pinetop-Lakeside	Highly	Critical	6 - 12 hours	< 1 week	3.45
Show Low	Highly	Critical	6 - 12 hours	< 1 week	3.45
Snowflake	Possibly	Limited	6 - 12 hours	< 1 week	2.25
Taylor	Possibly	Limited	> 24 hours	< 1 week	1.65
Winslow	Possibly	Limited	12 - 24 hours	< 1 week	2.85
Unincorporated Navajo	Highly	Catastrophic	12 - 24 hours	< 1 week	3.85

Vulnerability to communities affected by a major snowfall event includes power outages. Power outages are common during major winter storms and can put citizens at risk of health hazards due to exposure to freezing conditions. Citizens can be trapped in their homes due to excessive snowfall and while the County provides plowing to recognized county roads, many residents live on primitive or non-maintained roads and have to wait for the snow to melt or clear the roads using private parties. Emergency services are affected by severe winter weather trying to respond to calls for assistance. Calls for assistance may take longer due to poor driving conditions and access due to excessive snowfall. Public Works Departments and Arizona Department of Transportation work extended hours when severe weather strikes costing additional overtime wages. Business owners have to compete for limited private snow plow contractors to clear parking lots so retail services can be impacted in delayed opening of their establishments. Traffic accidents are prevalent during winter storms due to black ice and severe driving conditions. Supplies coming from the valley are often delayed during major winter storms due to hazardous driving conditions. Due to snowfall, icy roads and high winds Interstate 40 is subject to closure thus stranding freight haulers and motorists. In January 2010 during the major snowstorm a freight hauler hauling cattle had to be diverted to Holbrook fairgrounds to stage the cattle while the Interstate was closed. School closures or delays and temporary business closures are common during severe winter storms. Roof damage and collapse to structures occurs during severe winter storms due to heavy snow loads. Older structures within the county may not meet current building codes and are subject to collapse from heavy snowfall. Many of the residents living in these types of structures do not have adequate property insurance which can affect the ability to rebuild and would displace the residents long-term. In January 2010 the cost of the three day winter storm exceeded $728,000 in road repairs and emergency protective measures. Many communities experienced weeks of reconstructive roadwork to repair the damage caused by the extreme snowfall.

Development Trend Analysis

Future development will expand the exposure of life and property to the hazard of winter storm events. Enforcement and/or implementation of modern building codes to regulate new developments in conjunction with public education on how to respond to hazardous winter conditions is probably the best way to mitigate such losses.

Sources

AZ Dept of Emergency and Military Affairs (DEMA), 2010 and 2013, State of Arizona Hazard Mitigation Plan

NWS Flagstaff Forecast Office, 2011, http://www.wrh.noaa.gov/fgz/safety/criteria.php?wfo=fgz

US Dept of Commerce, National Climatic Data Center, 2016, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

US Dept of Commerce, National Climatic Data Center, 2010, US Snow Climatology Project: http://www.ncdc.noaa.gov/ussc/USSCAppController?action=map

4.5 Risk Assessment Summary

The jurisdictional variability of risk associated with each hazard assessed is demonstrated by the various ratings in the preceding hazard profiles. Accordingly, each jurisdiction has varying levels of need regarding the hazards to be mitigated, and may not consider all of the hazards as posing a great risk to their individual communities. This table summarizes the mitigation actions selected for mitigation by each jurisdiction.

Table 4-15: Hazards to be Mitigated by Jurisdiction

Jurisdiction	Dam Failure	Drought	Flooding	HazMat	Levee Failure	Severe Wind	Wildfire	Winter Storm
Unincorporated Navajo County	X	X	X	X	X	X	X	X
Holbrook		X	X	X	X	X	X	
Pinetop-Lakeside		X	X	X		X	X	X
Show Low	X	X	X	X		X	X	X
Snowflake	X	X	X	X		X	X	
Taylor	X	X	X			X	X	
Winslow		X	X	X	X	X	X	X

SECTION: MITIGATION STRATEGY

5.1 Section Changes

- The goals and objectives for this Plan have been changed to a clearer, concise and less complicated structure.

The mitigation strategy provides actions that will reduce or possibly remove the community's exposure to hazard risks. The primary components of the mitigation strategy are generally categorized into the following:

Goals and Objectives

Capability Assessment

Mitigation Strategy

The entire 2011 Plan mitigation strategy was reviewed and updated by the Planning Team. Specifics of the changes and updates are discussed in the subsections below.

5.2 Hazard Mitigation Goals and Objectives

The goal and objectives were developed after reviewing the structure used in the 2011 Plan. Jurisdictions were given the opportunity to comment and edit the goals to fit the mitigation vision for their community. Changes to the previous goals and objectives were made with consideration of the following:

- Do the goals and objectives reflect the updated risk assessment?
- Did the goals and objectives lead to mitigation projects and/or changes to policy that helped the jurisdiction(s) to reduce vulnerability?
- Do the goals and objectives support any changes in mitigation priorities?
- Are the goals and objectives clear and understandable?
- Are the goals and objectives redundant?

The most significant finding was that the goals and objectives were far too complicated and redundant. The structure could be modified to be less hazard-specific and still support the vision of the Planning Team. The result of the discussions resulted in the following revised goal and objectives:

GOAL: Reduce or eliminate the risk to people and property from natural hazards.

Objective 1: Reduce or eliminate risks that threaten life and property within Navajo County.

Objective 2: Reduce risk to critical facilities and infrastructure from impacts of hazards within Navajo County.

Objective 3: Promote hazard mitigation throughout Navajo County.

Objective 4: Increase public awareness of hazards and risks within Navajo County.

5.3 Capability Assessment

This section describes the capabilities and resources available to the communities in order to aid in the implementation of this Plan's mitigation measures. The jurisdictions have the power to adopt and implement regulations for land use, zoning, and historic preservation and to adopt standards of construction and modifications of land and structures. Since the 2011 Plan the jurisdictions have made progress in updating ordinances, plans and adopting more current building codes. The jurisdictions within Navajo County have populations ranging from just under 11,000 in Show Low to under 4,200 in Taylor. Most of the county's residents live in the unincorporated areas of the county. Over 60% of the County is comprised

of Indian Reservation land. There is limited new development and growth in the area, therefore less regulatory restrictions than one might see in larger populated areas.

Here are some of the capabilities that may aid in the implementation of the mitigation strategy:

Table 5-3-1: Legal & Regulatory Capabilities for Navajo County

Tool for Hazard Mitigation	Description	Responsible Department/Agency
Ordinances	• Navajo County Ordinance 01- 15 – Outdoor Fire Ordinance • Navajo County Ordinance FCD 01-16 – Flood Damage Prevention Ordinance • Navajo County Ordinance 01-12 – Fireworks Ordinance	• Navajo Co Emergency Management • Navajo Co Flood Control • Navajo Co Emergency Management
Plans, Manuals, Guidelines	• Comprehensive Plan – Includes sections related to Land use, Transportation, Water Resources, Open Space 05-11 • Navajo County Multi-Hazard Mitigation Plan (2017)	• Navajo County Public Works • Navajo Co Emergency Management
Studies	• I-40 Commodity Flow Study	• Navajo Co Emergency Management/AZ State Emergency Response Commission

Table 5-3-2: Technical Staff/Personnel Capabilities for Navajo County

Staff/Personnel Resources	Department/Agency – Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Public Works / Planning & Zoning
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Public Works (3)
Planner(s) or engineer(s) with and understanding of natural and/or human- caused hazards	Public Works
Floodplain Manager	Flood Control Districts
Surveyors	Public Works (2)
Staff with education or expertise to assess the community's vulnerability to hazards	Public Works (2)
Personnel skilled in GIS and/or HAZUS	Public Works (3)
Scientists familiar with the hazards of the community	No
Emergency Manager	Emergency Management (2)
Grant writer(s)	Department Specific

Table 5-3-3: Fiscal Capabilities for Navajo County

Financial Resources	Accessible or Eligible to Use	Comments
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	No	

Impact fees for homebuyers or new developments /homes	No	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other	Yes	

Table 5-3-4: Legal & Regulatory Capabilities for Holbrook		
Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
Codes	1994 UPC 1997 UBC 1997 UMC 1999 UEC • Holbrook City Code	• City Clerk
Ordinances	• Flood Damage Prevention Ordinance (Chapter 8 of City Code)	• City Clerk
Plans, Manuals, Guidelines	• Emergency Operations Plan (1/2004) – Used to respond to emergencies / disasters. • General Plan (Revised 2005) – Used to present a series of polices that establish a basic direction & approach to guide the future growth & development of Holbrook. • Water System Master Plan (4/2001) & Sewer System Master Plan (4/2001) – Plans including: system inventory, mapping, sampling, computer modeling and improvement priority list. • Street Master Plan (12/2003) – A long term plan for preventive maintenance & pavement preservation, including an inventory, traffic count, treatment options & projected costs.	• City Manager • City Clerk

Table 5-3-5: Technical Staff/Personnel Capabilities for Holbrook	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	City Manager
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	(Contract Engineer)
Floodplain Manager	City Clerk / City Of Holbrook
Surveyors	Public Works Dept. / City Of Holbrook
Staff with education or expertise to assess the community's vulnerability to hazards	Public Works Dept. / City Of Holbrook
Personnel skilled in GIS and/or HAZUS	Navajo County
Emergency Manager	Police Dept. / City Of Holbrook
Grant writer(s)	Admin. Dept. / City Of Holbrook

Table 5-3-6: Fiscal Capabilities for Holbrook		
Financial Resources	**Accessible or Eligible to Use**	
Community Development Block Grants	Yes	
Capital Improvements Project funding	No	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for home buyers or new developments /homes	No	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other/Improvement Districts	Yes	

Table 5-3-7: Legal & Regulatory Capabilities for Pinetop-Lakeside		
Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**

Codes	IBC (2006)
	• 2006 International
	  • Building Code
	  • Residential Code
	  • Mechanical Code
	  • Plumbing Code
	  • Existing Building Code
		• Community Development Dept
		• Public Works Dept
		• Police Department

Ordinances	• Drainage Regulations – Ord. 08-318 § 2 • Floodplain Regulations – Ord. 14-384§ 1 • Forest Health and Fire Protection – Ord. 15-393§1 & Ord. 10-337§2 • Subdivisions Ordinance 16-401	• Community Development Dept
Plans, Manuals, Guidelines	• General Plan (updated 2015) – Planning Tool for Town • Navajo Co Multi-Jurisdictional Mitigation Plan (2011)	• Community Development Dept • Public Works Dept/Community Development
Studies	• Navajo County Sub Regional Transportation Study	• Pinetop-Lakeside Public Works Dept

Table 5-3-8: Technical Staff/Personnel Capabilities for Pinetop-Lakeside	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Community Development Director; Public Works Director, Planning & GIS Technician (3)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Community Development Director; Public Works Director (2) On-Call Engineers (2)
Planner(s) or engineer(s) with and understanding of natural and/or human- caused hazards	Community Development Director, Public Works Director, Police Chief (3)
Floodplain Manager	Community Development (1)
Surveyors	On-Call Surveyors (2)
Staff with education or expertise to assess the community's vulnerability to hazards	Police Chief; Community Development Director; Fire Chiefs (4)
Personnel skilled in GIS and/or HAZUS	GIS and Planning Technician (1)
Emergency manager	Town Manager; Police Chief (1); or Designee
Grant writer(s)	Contract & Grant Administrator (1) Other: Police and Library Departments (2)

Table 5-3-9: Fiscal Capabilities for Pinetop-Lakeside		
Financial Resources	**Accessible or Eligible to Use**	**Com ments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	No	Franchise fees only.
Impact fees for homebuyers or new developments /homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	Not currently utilizing special tax bonds

Table 5-3-10: Legal & Regulatory Capabilities for Show Low		
Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
Codes	• IBC 2006 Building Code	• Community Development
Ordinances	• City of Show Low Zoning Ordinance • Subdivision Ordinance or Regulations • City of Show Low Building Ordinance	• Planning & Zoning Commission
Plans, Manuals, Guidelines	• General Plan (03/2008) – used to present a series of polices that establish a basic direction & approach to guide the future growth & development. • Show Low Multi-Hazard Mitigation Plan (2006)	• Planning & Zoning Dept • Public Works
Studies	• Water Master Plan/Model	• Engineering

Table 5-3-11: Technical Staff/Personnel Capabilities for Show Low	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	City Engineer, Public Works Director, Planning & Zoning Director, Planner (4)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	City Engineer, Public Works Director, Public Works Operations Manager, Construction Inspector, Planning & Zoning Director, Chief Building Official, Building Inspector (7)
Planner(s) or engineer(s) with and understanding hazards	Engineer, Public Works Director, Planning & Zoning Director, Chief Building Official (5)
Floodplain Manager	Engineer (2)
Staff with education or expertise to assess the community's vulnerability to hazards	Engineer and Police Chief (2)
Personnel skilled in GIS and/or HAZUS	Geographic Information Systems Manager and GIS Analyst (2)
Emergency manager	Police Chief, City Manager and Public Works Director (3)
Grant writer(s)	Grants/Housing Coordinator (1)

Table 5-3-12: Fiscal Capabilities for Show Low		
Financial Resources	**Accessible or Eligible to Use**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments /homes	Yes	
Incur debt through general obligation bonds	Yes	

Table 5-3-13: Legal & Regulatory Capabilities for Snowflake		
Tools for Hazard	**Description**	**Responsible Department/Agency**
Codes	• 2006 International Building Code, Residential Code, Fire Code, Mechanical Code, Plumbing Code, Existing Building Code • 2005 National Electrical Code • State Standard 8-99 for Flood prone Residential Lots	• Planning/Zoning/Building Safety
Ordinances	• Zoning Ordinance • Public Health and Safety Ordinance • Subdivision Ordinance • Flood Control Ordinance • Material Extraction Ordinance (Sand and Gravel)	• Planning/Zoning/Building Safety • Floodplain Administrator/Engineer
Plans, Manuals, Guidelines	• General Plan (2008) – A Planning Tool for Town • Capital Improvement Plan • Town of Snowflakes Emergency Operations Plan • Town of Snowflake Drought Plan • National Incident Management System	• Planning/Zoning/Building Safety • P.W. Director / Town Engineer • Fire/Police Dept • P.W. / Water Dept • Fire/Police Dept
Studies	• 100 Year Assured Water Supply • FEMA DFIRM Maps (FEMA, Effective date of September 2008) • Navajo County Transportation Plan	• Public Works / Water Dept • ADWR • FEMA • Navajo County • Town Engineer

Table 5-3-14: Technical Staff/Personnel Capabilities for Snowflake	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Public Works / Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building Safety- Building Inspector Public Works – P.W. Director Town Engineer
Floodplain Manager	Town Manager / P.W. Engineer
Surveyors	(On Contract As Needed)
Staff with education or expertise to assess the community's vulnerability to hazards	Public Works- Staff Town Engineer Fire/Police Departments
Personnel skilled in GIS and/or HAZUS	Public Works
Emergency manager	Fire Chief / Police Chief
Grant writer(s)	Librarian/Asst. Fire Chief/Police Chief
Planner(s) or engineer(s) with knowledge of land development and land management practices	Town Engineer

Table 5-3-15: Fiscal Capabilities for Snowflake		
Financial Resources	**Accessible or Eligible to Us**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	

Table 5-3-15: Fiscal Capabilities for Snowflake		
Financial Resources	**Accessible or Eligible to Us**	**Comments**
Impact fees for homebuyers or new developments /homes	Yes	Not currently charging impact fees
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Table 5-3-16: Legal & Regulatory Capabilities for Taylor		
Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
Codes	• 2015 International Residential, Building, Existing Building, Plumbing, Mechanical, Fire, Fuel Gas, Urban-Wildland Interface Code • 2009 International Energy Compliance Code • 2014 International Electrical Code w/97 NEC as reference	• Building Dept. • Zoning Dept. • Fire Dept. • Flood Administrator
Ordinances	• Zoning Ordinance (2017) • Building Code Ord. (2015) • Subdivision Regulations (2007) • 2016 Flood Ord.	• Zoning Dept. • Building Dept. • Public Works Dept. • Flood Administrator • Fire Dept. • Engineering
Plans, Manuals, Guidelines	• General Plan (1/8/2014) – Planning Tool for Town • Drainage • Town of Taylor Multi-Hazard Mitigation Plan (2011)	• Building Dept. • Zoning Dept. • Fire Dept. • Flood Administrator
Studies	• Cottonwood wash study	• Flood administrator • Navajo Co Flood Dept.

Table 5-3-17: Technical Staff/Personnel Capabilities for Taylor	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Jeff Johnson –Zoning Administrator Stuart Spaulding – Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Jeff Johnson – Building Official
Planner(s) or engineer(s) with and understanding of natural and/or human- caused hazards	Stuart Spaulding
Floodplain Manager	Ron Solomon
Emergency Manager	Clint Burden – Fire Chief Ron Solomon – Public Works

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Table 5-3-18: Fiscal Capabilities for Taylor		
Financial Resources	**Accessible or Eligible to Use**	**Comments**
Community Development Block Grants	Yes	Apply for CDBG on a by-annual basis.
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments /homes	Yes	Sewer
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Table 5-3-19: Legal & Regulatory Capabilities for Winslow		
Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
Codes	• 2003 IBC, IFC, IPC, IMC • 2005 National Electrical Code	• Community Development • Building Dept • Fire Dept
Ordinances	• Zoning Ordinance of Winslow, Title 17, Winslow Municipal Code, Ord 736, 1997 (w/subsequent amendments). • Subdivision Ordinance of Winslow, Title 16, Winslow Municipal Code, Ord 920, 2003 (and Prior Code). • Subdivision Ordinance of Winslow, Title 16, Winslow Municipal Code, Ord 920, 2003 (and Prior Code). • Buildings & Construction, Title 15, Chap 15.16, Flood Damage Prevention, Ord 734, 1997 (and Section 10.5, Prior Code). • Post Disaster Recovery Plan – Winslow Res 189, adopted September 21, 1989	• Community Development • Planning and Zoning • Fire Dept • Police Dept
Plans, Manuals, Guidelines	• Winslow General Plan (6/2002) – General Plan includes all elements mandated in Title 9, ARS. Includes Environmental Planning Element. • Winslow Emergency Operations, Plans, and Procedures (Revised 1995) – Summarizes adopted emergency response plans, legal authority, and mitigation and recovery plans.	• Community Development • Planning and Zoning • Fire Dept • Police Dept
Studies	• Flood Insurance Study; September 26, 2006. Panel number 04017CV001A, 04017CV002A, & 04017CV003A	• Community Development

Table 5-3-20: Technical Staff/Personnel Capabilities for Winslow	
Staff/Personnel Resources	**Department/Agency – Position**
Planner(s) with knowledge of land development and land management practices: Paul Ferris	City Planner
Professional(s) trained in construction practices related to buildings and/or infrastructure: Marshall Larson, Mark Woodson, and Allan Rosenbaum	City Inspector (Building Official), City Engineer, Utility and Environment Director
Engineer(s) and other staff with and understanding of natural and/or human- caused hazards: Mark Woodson & Tim Westover	City Engineer and Fire Chief: James Hernandez
Floodplain Manager: Paul Ferris	City Planner
Surveyors: Mark Woodson	City Engineer
Staff with education or expertise to assess the community's vulnerability to hazards: Mark Woodson, Tim Westover & Allan Rosenbaum	City Engineer, Fire Chief/Dept, Police Chief/Dept, Utility and Environment Director: Dan Brown
Personnel skilled in GIS and/or HAZUS:	Planner: Mark Woodson
Scientists familiar with the hazards of the community	None on City staff. Other sources of expertise include NAU, USFS, USGS, NRCS, and NWS
Emergency Manager: James Hernandez	Fire Chief

Table 5-3-20: Technical Staff/Personnel Capabilities for Winslow	
Staff/Personnel Resources	**Department/Agency – Position**
Grant writer(s): Individual department heads	Individual department heads. This position has been

Table 5-3-21: Fiscal Capabilities for Winslow		
Financial Resources	**Accessible or Eligible to Use**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific	Yes	
Fees for water, sewer, gas, or electric service	Yes, City Council can increase water/sewer fees.	City does not provide gas or electric service (private enterprise).
Impact fees for homebuyers or new developments /homes	No adopted impact fees.	Staff is developing an off-site improvements ordinance that will include provisions for developer-financed off-site public improvements.
Incur debt through general obligation bonds	Yes, if voters approve.	
Incur debt through special tax bonds	Yes	

5.4 Mitigation Measures

Mitigation measures are those activities identified by a jurisdiction, that when implemented, will have the effect of reducing the community's exposure and risk to the particular hazard or hazards being mitigated. The process for defining the list of mitigation measures for the Plan was accomplished by assessing the measures from the 2011 Plan, wherein each jurisdiction reviewed and evaluated their specific list. A list of current measures was developed by combining the carry forward results from the assessment with new measures, when appropriate.

Previous Mitigation Measure Assessment

Each jurisdiction reviewed and assessed the status of their measures from the 2011 Plan. Measures with a disposition of "Keep" or "Revise" were carried forward to become part of the list for this Plan. Measures identified for deletion were removed and are not included in this Plan. The results of the assessments are included in this Plan's Appendix.

Current Mitigation Measures

Upon completion of the Risk Assessment, the Planning Team developed current mitigation measures using the goals and objectives, results of the vulnerability analysis and capability assessment, and the Planning Team's institutional knowledge of hazard mitigation needs in the community. In addition to other community specific mitigation needs, each jurisdiction remains committed to continuing their active participation in the National Flood Insurance Program (NFIP).

Specific elements identified as a part of the mitigation strategy included:

- **Hazards Mitigated**
- **Assets Mitigated**
- **Estimated Cost**
- **Priority Ranking** – each measure was assigned a ranking of "High", "Medium", or "Low. The assignments were subjectively made using a simple process that assessed how well the measure satisfied the following considerations:
    - A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
    - A direct beneficial impact on the ability to protect life and/or property from natural hazards.
    - A mitigation solution with a long-term effectiveness
- **Mechanism(s) for Implementing**
- **Estimated Completion Date**
- **Lead Agency**
- **Potential Funding Source(s)**

Table 5-4-1: Mitigation Measures for Navajo County

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Potential Funding Source(s)
HIGH PRIORITY							
Provide public education preparedness campaigns designed to inform citizens for all hazards to include public service announcements, public access TV, website, Facebook, Twitter	All	Both	$10,000	Work with all agencies and media partners to provide relevant information sharing, training and education.	On-going	Navajo Co Emergency Mgmt & Preparedness	Emergency Management Planning Grant/ State Homeland Security/ Public Health Preparedness grant/ General Fund
Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	All	N/A	$5,000	Update existing evacuation brochure. Disseminate information to citizens.	On-going	Navajo Co Emergency Mgmt & Preparedness	Emergency Management Planning Grant/ General Fund
Levee Decertified by FEMA, Improve the Winslow Levee System to reduce the chance of failure future flooding events.	Flood, Levee Failure	Both	$66M	Cost Share with Army Corps.	2020	Flood Control	Army Corp/ Flood Control
Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	Both	$100,000	Partner with fire districts and U of A Cooperative Extension.	On-going	All local fire districts	Wildland Urban Interface
Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties.	All	Both	$3,500	Renew existing Intergovernmental Agreements with local jurisdictions.	On-going	Navajo Co Emergency Mgmt & Preparedness	Emergency Management Planning Grant/ General Fund

Table 5-4-1: Mitigation Measures for Navajo County

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Potential Funding Source(s)
Maintain compliance with NFIP regulations by enforcement of the Navajo Co Flood Damage Prevention Ordinance through review of new or substantially improved development located in the floodplain and issuance of floodplain use permits.	Flood	Both	Staff Time	NFIP Program	On-going	Navajo Co Flood Control	Flood Control
Participate in the Community Rating System (CRS) and establish a community CRS champion.	Flood	Both	Staff Time	NFIP Program	On-going	Navajo Co Flood Control	Flood Control
Complete Broad Band Study and implement recommended protection measures.	Terror	Both	$1M	Semiannual reports to manager	2017	IT Director	Grant and consortium with Summit
Develop Capability it ID and Defend from Cyber Attack.	Terror	Both	$1.5M	Semiannual reports to manager	Ongoing	IT Director	General Fund
Increase storage for distributor recovery.	All	Both	$2M	Semiannual reports to manager	Ongoing	IT Director	General Fund
MEDIUM PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	All	New	$242,000 Bldg $20,000 Flood Control	Review update ordinances, codes. Review and approval of permits.	On-going	Building/ Planning & Zoning	General Fund/ Flood Control

Table 5-4-1: Mitigation Measures for Navajo County

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Potential Funding Source(s)
Continue to locate non-reporting Hazmat locations	HazMat	Both	$1,000	Extract data from CAMEO and compare with fire department reports.	On-going	Navajo Co Emergency Mgmt & Health Dept	Public Health Preparedness
Develop resource materials describing diseases associated with rural environments and life-style—how to recognize potential hazards and symptoms, and how to prevent infection	Disease	Both	$3,000	Distribution of resource materials. Community Education.	On-going	Public Health	Public Health
Sponsor interagency and public seminars to coordinate efforts to mitigate damage and losses due to drought and develop a drought mitigation plan.	Drought	Both	$5,000	Partner with ADWR	On-going	Navajo Co Emergency Mgmt & Preparedness, ADWR	ADWR and USDA funding
Complete Evacuation Route Planning, Modeling, and Mapping.	All	Both	$200,000	Semiannual reports to manager	On-going	Navajo Co Emergency Mgmt & Preparedness	General Funds
Replace generator that controls the water release gate.	Dam	Both	$1,500	Public Works to partner with funding source to procure equipment	2020	Navajo Co Public Works	EMPG Grant or Flood Control
Conduct study to update drainage problem mitigation and identify improvements for unincorporated areas of Navajo County	Flood	Both	$200,000	Flood Control to hire consultant to review and update plan.	2020	Navajo Co Flood Control	Flood Control and Hazard Mitigation Funds

Table 5-4-2: Mitigation Measures for Holbrook

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure.	All	Both	Staff time	Existing city policies and municipal codes	On going	City Clerk, City Manager	General Fund Revenues
Maintain Buffalo Street drainage channel from 13th Ave West approximately 1,000 feet.	Flood	Both	$2,000	Operational budget	Ongoing	Street Superintendent	HURF
Screen all building permits for intersection with delineated floodplains and enforce current floodplain management ordinance provisions per the requirements of the NFIP.	Flood	Both	Staff Time	Building Permit Review	Ongoing	Building Director, City Manager	General Fund
Create Staffing plan to Keep staff up to date on training for National Incident Management Training.	Response	Response	$10,000	Semiannual reports to manager	On Going	Public Works	General Fund
MEDIUM PRIORITY							
Conduct regular maintenance of erosion protection along the levees of the Little Colorado River.	Flood,	Both	$50,000	Allocation of 1 FTE per levy o/m manual	Ongoing	Levy Facilities Superintendent	General Fund
Replace part time levee maintenance person with full time employee.	Flood, Levee Failure	Both	$25,000	Continued budget control	Ongoing	City Manager, Finance Director	General Fund Revenues
Maintain drainage facilities and manage drainage impacting 8th Avenue in the area of the School District.	Flood	Existing	$2,000	Operational budget	Ongoing	Street Superintendent	HURF
Continue to develop resource materials and educate the public regarding NIMS compliant evacuation procedures and individual responsibilities in the event of an emergency.	All	Both	$200	NIMS training 95% complete	Ongoing	Safety Officer	General fund

Table 5-4-2: Mitigation Measures for Holbrook							
Description	**Hazard(s) Mitigated**	**Assets Mitigated (Ex/New)**	**Estimated Cost**	**Mechanism(s) for Implementing**	**Est Completion Date**	**Lead Agency**	**Funding Source(s)**
Obtain Software and Complete Community Fire Flow Modeling.	Wildfire	Both	$0	Semiannual reports to manager	Complete	Town Engineer	Free
Complete Evacuation Route Planning, Modeling, and Mapping.	All	Both	$200,000	Semiannual reports to manager	2025	Town Engineer	General Fund
LOW PRIORITY							
Eradicate non-native species from riverbed of major watercourses throughout the City.	Flood,	Both	$10,000	Allocation of 1 FTE per levy o/m manual	Ongoing	Levy Facilities Superintendent	General Fund
Develop and adopt citywide water conservation standards, citing USGS precipitation records.	Drought	Both	$30,000	Hire consultant	Ongoing	City Manager	Utility fund
Develop a drought mitigation plan.	Drought	Both	$30,000	Hire consultant	Ongoing	City Manager	General fund

Table 5-4-3: Mitigation Measures for Pinetop-Lakeside

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Enforce the adopted fire mitigation and wildland/urban interface ordinance.	Wildfire	Both	Staff	Town Code	On Going	Community Development	General Fund
Develop neighborhood wildfire assessments and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	Both	Staff	Town Code	On going	Community Development	General Fund
Establish alternate routes through Town through the implementation of recommendations in the 2007 Navajo County Sub- Regional Transportation Study.	All	Both	$2.2 million	Navajo Co Sub-Regional Transportation Study	2015	Public Works/ ADOT	ADOT/ FHWA
Implement plan to update staff on National Incident Management Training	Response	Response	$10,000	Semiannual reports to manager	Ongoing	Public Safety/Public Works	General Fund
MEDIUM PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, winter storm, and other hazards on new buildings and infrastructure.	Drought, Flood, Severe Wind, Winter Storm	New	$10,000 (Abatement) Staff	Town Code	On going	Community Development	General Fund
Expand wildfire related public education activities to increase awareness of the Town's Forest Health and Fire Protection Ordinance using public service announcements, public access TV,	Wildfire	Both	$8,000	N/A	On going	Community Development	General Fund

Table 5-4-3: Mitigation Measures for Pinetop-Lakeside

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
Partner with ADWR to provide public education for dam inundation area/warning systems.	Flood, Levee Failure, Dam Failure	Both	$50,000	N/A	On going	Community Development	ADWR/ General Fund
Promote adoption of All Hazard Mutual Aid Agreements with all incorporated communities and adjoining counties.	All Hazards	Both	$10,000	N/A	2012	Police Department	General Fund
Develop additional stream flow and channelization project for Billy Creek and prepare a corresponding Letter of Map Revision per the NFIP requirements, to reflect the constructed improvements	Flood	Both	$200,000	Floodplain Management, NFIP	2014/Com pleted	Parks and Recreation	ADWR
Secure all water/wastewater and sanitation facilities	Terrorism, Vandalism	Existing	$1,000,000	Council directive budget approval	7/2013	Water Sanitation Districts	Utility Fund Revenues
Obtain Software and Complete Community Fire Flow Modeling	Wildfire	Both	$1,000,000	Semiannual reports to mgr	2025	Fire District PD/PW	General Fund
Complete Evacuation Route Planning, Modeling, and Mapping	All	Complete	$200,000	Semiannual reports to mgr	Requires date	Public Works	General Fund
LOW PRIORITY							
Continue process of establishing vegetation to reduce sediment flow and mitigate flood related erosion in the Woods Subdivision.	Flood	Existing	$5,000	N/A	2022	Public Works	HURF
Develop a drainage master plan for the entire community.	Flood	Both	$250,000	N/A	2025	Community Development/ Public Works	ADWR Grants
Develop a drought mitigation plan	Drought	Both	$5,000	N/A	2014	Community Development	ADWR General Fund

Table 5-4-3: Mitigation Measures for Pinetop-Lakeside

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Estimated Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
Buy and install backup generators for Town Hall and other Public Works buildings and Critical Facilities to mitigate against power failures during hazard events	All	Existing	$50,000	Capital improvement plan/ budget	Requires date	Public Safety & Public Works	Various utility, General Fund, HURF

Table 5-4-4: Mitigation Measures for Show Low

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	All	Both	Staff Time	City Code	Ongoing	Community Development / Public Works Depts	General Fund and Permit Fees
Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	All	Both	Staff Time	N/A	Ongoing	City attorney / Manager	City General Fund
Develop a drainage master plan for the community	Flooding	Both	Staff time	City Code, FEMA requirements	2022	Public Works	City general Fund, Possible future storm water utility
Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	Dam Failure	Both	$10M +	ADWR Rules	2021	Show Low Public works, ADWR	Grants
Partnership with BIA, Forest Service, and local fire districts to train firefighters on wildfires and build a multi- jurisdictional firefighting base at Show Low airport	Wildfire	Both	$4M	Coordination between USFS, BIA, City, Public Safety bureaus	2014	Show Low Public Work, BIA, USFS, Show Low airports	Grants , Bonds, Public/Private Partnering
Create Staffing plan to keep staff up to date on training for National Incident Management TrainiG	Response	Response	$10,000	Semiannual reports to mgr	2018	Public works	General fund

Table 5-4-4: Mitigation Measures for Show Low

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
MEDIUM PRIORITY							
Expand wildfire public education activities to include public service announcements, public access TV, website	Wildfire	Both	$5000 / year	N/A	Ongoing	Timber Mesa Fire and Medical District of TMFMD	Grants, Fire Dept. Budget, City General Fund
Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	Wildfire	Both	Staff time	Fire Code/ IGAs	Ongoing	Community Development / Public Works Timber Mesa Fire and Medical District of TMFMD	Grant funds, Fire district
Partner with the Sitgreaves Forests Partnership to establish a disposal site for lot cleanup for Wildfires	Wildfire	Both	Staff time	IGAs	Ongoing	Community Development / Public Works Timber Mesa Fire and Medical District of TMFMD Sitgreaves Forests Partnership	City General Fund
Partner with the Sitgreaves Forests Partnership to conduct outreach and attract sustainable, small-diameter wood- based businesses into the area	Wildfire	Both	Staff time	IGAs	Ongoing	Sitgreaves Forests Partnership City Business development staff Chamber of commerce	General Fund, Possible grants
Adopt through council the Fire Resistant Building Code	Wildfire	Both	Staff time	City Code	Future	Community development	General Fund
Coordinate among law enforcement and transportation departments to increase enforcement of HAZMAT transportation codes and regulations	HazMat	Both	Staff time	Rules and Procedures	2014	Show Low Police Dept. Timber Mesa Fire and Medical District of TMFMD Dept, Show Low public works dept.	General fund, Fire dist budget, grants
Develop a drought mitigation plan	Drought	Both	Staff time /$50,000 consultant	Rules and Procedures City Code	Future	Show Low Planning and Zoning, Public Works	Grants

Table 5-4-4: Mitigation Measures for Show Low

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
Secure all water/wastewater and sanitation facilities	Terrorism, Vandalism	Existing	$250,00	Council directive budget approval	2025	Water Superintendent, City Manager	Utility Fund Revenues
Develop Surface Water Sources for Show Low Lake	Drought	Both	$6M	Capital improvement plan/ budget	2019	Public Works	General Fund
Obtain Software and Complete Community Fire Flow Modeling	Wildfire	Both	$1M	Semiannual reports to mgr	2018	City Engineer	General fund
Complete Evacuation Route Planning, Modeling, and Mapping	All	Both	$300,000	Semiannual reports to mgr	2018	Public Works	General fund
Buy and install backup generators for Public Works buildings and Critical Facilities to mitigate against power failures during hazard events	All	Existing	$500,000	Capital improvement plan/ budget	2025	Public Works Director	Various utility, General Fund, CIP

Table 5.4.5: Mitigation Measures for Snowflake

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new buildings and infrastructure	All	Both	$350,000	Staff meetings Planning & Zoning, Town council	On going	Planning Dept	General fund
Keep staff up to date on training for National Incident Management Training	Response	Both	$10,000	Semiannual reports to mgr	On Going	Fire/Police	General fund
Investigate the creation of a fire district to include full time personnel to provide protection for wildfire and other fire related needs.	Response	Response	$50,000	Semiannual reports to mgr	On Going	Fire chief	General fund
Drill two new wells, build three storage tanks, and tie other existing wells into Town System	Wildfire	Both	$10M	Annual reports to mgr	Within 2 yrs of funding	Public works	Water fund
Institute a maintenance program to regularly clear and clean storm drains, grates, culverts, and detention basins, and review adequacy of drainage systems.	Flood	Both	$50,000	Quarterly public works director/engineer review	On Going	Public works	General fund
The Town will adopt ordinances to manage flood plain to standards identified by the National Flood Insurance Program.	Flood	Both	$15,000	Contract engineer to develop and Implement	Complete	Town engineer	General fund
The Town will develop a Standard Operating Procedure for review of all construction and development permits in or near an area of special flood hazard.	Flood	Both	$15,000	own engineer	On Going	Town engineer	General fund
The Town will review seasonal effects of localized flooding, identify areas of localized flood hazard and implement strategies to mitigate.	Flood	Both	$50,000	Annual public works review	On Going	Public works	General fund
MEDIUM PRIORITY							

Table 5.4.5: Mitigation Measures for Snowflake

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
Improve and expand current drought mitigation plan	Drought	EX	$100,000	Semiannual reports to mgr	On Going	Water dept	Utility fund
Develop and adopt citywide water conservation standards, citing USGS precipitation records	Drought	Both	$100,000	Semiannual reports to mgr	On Going	Water dept	Utility fund
Develop a drainage master plan for the entire community	Flooding	Both	$750,000	Semiannual reports to mgr	On Going	Town engineer	General fund
Improve Community Fire Suppression System to include more fire hydrants, fire flow modeling, and software	Wildfire	Both	$1M	Semiannual reports to mgr	On Going	Town engineer	General fund
Create an ongoing maintenance plan for the Turley Subdivision Detention facility	Flooding	Existing	$20,000	Quarterly review by public works	On Going	Public works	General fund
Secure all water/ wastewater and sanitation facilities	Terrorism, Vandalism	Existing	$1M	Council directive budget approval	On Going	Water Superintendent, Town Manager	Utility Fund Revenues
Complete Evacuation Route Planning, Modeling, and Mapping	All	Both	$200,000	Semiannual reports to mgr	New	Town engineer	General fund
Complete fire infrastructure study to identify new water sources and infrastructure needs	Wildfire	Both	$1M	Semiannual reports to mgr	On Going	Town engineer	General fund
LOW PRIORITY							
Research/consider adopting a fire mitigation and wildland/urban interface ordinance	Wildfire	Both	$25,000	Annual reports to mgr	On Going	Fire chief	General fund

Table 5.4.5: Mitigation Measures for Snowflake

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion Date	Lead Agency	Funding Source(s)
Buy and install backup generators for City Hall and other Public Works buildings and Critical Facilities to mitigate against power failures during hazard events	All	Existing	$50,000	Capital improvement plan/ budget	New	Town Manager	Various utility, General Fund, HURF
Obtain Software and Complete Community Fire Flow Modeling	Wildfire	Both	$1M	Semiannual reports to mgr	On Going	Town engineer	General fund

Table 5-4-6: Mitigation Measures for Taylor

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Design and construct detention basins, channelization, install crossings, and general flood control features for Airport Wash.	Flooding	Both	$200,000	Navajo County FCD	2019 Grant applied for	Administration / Town Manager Public Works Dept / Director	PDM Grant
Cooperate and encourage the construction of Millet Swale improvements to ADWR standards with the Silver Creek Flood Protection District, to mitigate the potential for dam failure.	Dam Failure	Both	Staff Time	Silver Creek Flood Protection District	Within 2- years of acquiring funding	Public Works Dept / Director	General Fund
The Town will update the floodplain ordinance and permitting process to ensure compliance with the NFIP requirements.	Flood	Both	Staff Time	NFIP Compliance	New ordinance 2016 On Going	Building Inspector	General Fund
Create Staffing plan to Keep staff up to date on training for National Incident Management Training	Response	Response	$10,000	Semiannual reports to manager	Ongoing	Fire and Police	General Fund
MEDIUM PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure.	All	Both	Staff Time	General Plan, Zoning and Subdivision Regulations, State Standards, NFIP Reqs	Ongoing	Building Inspector Public Works / Director	General Fund
Secure all water/wastewater and sanitation facilities.	Terrorism, Vandalism	Existing	$1M	Council directive budget approval	Within 2 years of acquiring funding	Water Superintendent, City Manager	Utility Fund Revenues
Obtain Software and Complete Community Fire Flow Modeling	Wildfire	Both	$1M	Semiannual reports to manager	2025	Town engineer	General Fund

Table 5-4-6: Mitigation Measures for Taylor

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion	Lead Agency	Funding Source(s)
Complete Evacuation Route Planning, Modeling, and Mapping	All		$200,000	Semiannual reports to manager	2025	Town engineer	General Fund
Channelize Silver Creek from Taylor Dam to Rock Wall. Project involves staff working with private land owners to construct channelization measures.	Flood	Both	Staff Time	Coordination with Private Land Owners	Dependent on Private Development	Public Works Dept / Director	General Fund
LOW PRIORITY							
Buy and install backup generators for City Hall and other Public Works buildings and Critical Facilities to mitigate against power failures during hazard events.	All	Existing	$50,000	Capital improvement plan/ budget	Ongoing	City Manager	Various utility, General Fund,

Table 5-4-7: Mitigation Measures for Winslow

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion	Lead Agency	Funding Source(s)
HIGH PRIORITY							
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure. Includes enforcement of the floodplain ordinance in accordance with the NFIP, including regulating all and substantially improved construction in floodplains to reduce the losses to property and people.	All	Both	$110,000 /Year	City Ordinance, Floodplain Ordinance	On going	Community Development Dept. / Bldg Inspector & Planner	General Funds
Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties for all hazards.	All	Both	$ 0	Winslow Emergency Operations, Plans, & Procedures	On going	Community Development / Dale Patton	Op Budget, Self
Bring Drainage Master Plan up to date with current standards	Flood	Both	$200,000 (current floodplain study only)	Floodplain delineation study is underway to establish new flood zones.	Complete	City Floodplain Administrator	General Funds
Secure all water/wastewater and sanitation facilities	Terrorism, Vandalism	Existing	VSAT Money from HLS (not to be disclosed)	Designated City Employees	Complete	Utility / Director	Home Land Security /
Maintain and upgrade backup generators and fuel supply system for all critical facilities in regards to power and emergency response facilities to mitigate power outages due to hazard events	Severe Wind, Winter	Existing	$0 No Upgrade Needed	Repair and Maintenance as needed	On going	Fleet / Director	Self Funded
Create Staffing plan to Keep staff up to date on training for National Incident Management Training	Response	Response	$10,000	Semiannual reports to mgr	6/2012	Public works	General Fund
MEDIUM PRIORITY							

Table 5-4-7: Mitigation Measures for Winslow

Description	Hazard(s) Mitigated	Assets Mitigated (Ex/New)	Est Cost	Mechanism(s) for Implementing	Est Completion	Lead Agency	Funding Source(s)
Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	All	Both	$1000/yr publication cost	Public outreach through e-mail, Nixle (Phone notification)	On going	Police & Fire Depts / Chiefs	General Funds
Educate the public on Levee Failure evacuation procedures in the case that the levee system fails.	Levee Failure	Both	$1000 /yr for publication	Public outreach through local newspaper and newsletter	On going	Fire Dept / Chief	General Funds
Obtain Software and Complete Community Fire Flow Modeling	Wildfire	Both	$1M	Semiannual reports to mgr	2025	Town engineer	General Fund
Complete Evacuation Route Planning, Modeling, and Mapping	All	Both	$200,000	Semiannual reports to mgr	2025	Town engineer	General Fund
Improve Security at all water/wastewater and sanitation facilities.	Terrorism, Vandalism	Existing	$1M	Council directive budget approval	7/2013	Water Superintendent, City Manager	Utility Fund Revenues
LOW PRIORITY							
Train firefighters on wildfires through the State Land Department firefighting contract	Wildfire	Both	$1500/Person (20 people / At least 2 yrs	Based on availability of training classes and location	On Going	Fire Dept / Training Officer	Grants / State Land Funds
Eradicate nonnative species from riverbed of major watercourses within the city	Flood	Both	$100,000	N/A	N/A	Public Works	Self Funded
Buy and install backup generators for City Hall and other Public Works buildings and Critical Facilities to mitigate against power failures during hazard events	All	Existing	$50,000	Capital improvement plan/ budget	Generators exist for PD and City Hall	City Manager	Various utility, General Fund,

SECTION 6: PLAN MAINTENANCE

This section defines the processes or mechanisms for maintaining and updating this Plan. Elements of this section include:

Monitoring, Evaluating, Updating the Plan

Incorporation into Other Planning Mechanisms

Continued Public and Stakeholder Involvement

The Planning Team recognizes that this Plan is intended to be an active document with regularly scheduled monitoring, evaluation, and updating. This section outlines steps for the maintenance of this Plan.

There were very few formal reviews or maintenance actions of the previous Plan. Naturally the mitigation measures were referred to by jurisdictions when considering grant opportunities but little more occurred. Reasons for the lack of review included:

- A lack of institutional understanding that the review was needed.
- Changes in staffing/personnel that created a lack of continuity to the Planning Team and communication of the Plan maintenance responsibilities.
- Little economic incentive to invest the time.
- Low expectations of responsibility or communication of responsibility from the previous Planning Team.

To ensure the Plan review and maintenance process occur in the future, the processes will be adhered to in the future.

6.1 Monitoring, Evaluating and Updating the Plan

The Planning Team has established the following monitoring and evaluation procedures:

- **Schedule** – The Plan will be evaluated at least annually or following a major emergency/disaster. Navajo County will take the lead for initiating the evaluation on or around the anniversary of the Plan approval date.
- **Review Content** – The content and scope of the Plan evaluation will address the following questions:
    - **Hazard Identification:** Have the risks and hazards changed?
    - **Goals and objectives:** Are the goals and objectives still able to address current and expected conditions?
    - **Mitigation Measures:** What is the status of the mitigation measures and what can be done to increase the implementation of those measures?

Each jurisdiction will review the Plan as it relates to their community and document responses to the above questions and other related discussions. During the annual evaluation, the jurisdictions will have the opportunity to summarize their findings and discuss with the others. Documentation of evaluation results and notes on other related discussions during the life of this Plan will be documented and retained with the Plan, making it available during subsequent evaluations and five-year updates.

This Plan requires updating and approval from FEMA every five years. The Plan updates will adhere to that set schedule using the following procedure:

- One year prior to the Plan expiration date, the Planning Team will review and assess the Plan and other related documentation.
- The Planning Team will update and/or revise the appropriate or affected portions of the Plan.
- The updated Plan will be submitted to DEMA and FEMA for review, comment and approval.
- Upon receipt of 'Approvable Pending Adoption' determination from FEMA, the Planning Team will enter into a process by which the jurisdictions' respective councils officially adopt the Plan.
- The signed resolutions will be submitted to FEMA to ensure the official approval is received.

6.2 Incorporation into Existing Planning Mechanisms

Incorporation of the Plan into other planning mechanisms, either by content or reference, enhances a community's ability to perform hazard mitigation by expanding the scope of the Plan's influence. Some of the ways in which the Plan has been incorporated or referenced into other planning mechanisms are summarized below:

Table 6-1: Past Incorporation into Other Planning Mechanisms

Jurisdiction	Activities
Navajo Co	• The mitigation Plan was reviewed and considered when adopting the building and international residential code, updating the zoning ordinance, and the outdoor fire ordinance. • The mitigation Plan was used to help facilitate the update of the County Comprehensive Plan.
Holbrook	• The mitigation Plan was used when reviewing town code updates.
Show Low	• The mitigation Plan was used by the City of Show Low to help prioritize and plan Capital projects and Code Updates.
Snowflake	• The Plan was reviewed when applying for flood mitigation projects and town code updates.
Taylor	• The mitigation plan was used by the Town of Taylor when reviewing code updates and identifying future CIP projects.
Winslow	• The mitigation plan was used when developing the levee plan in partnership with Navajo County and the Army Corp.
Pinetop-Lakeside	• Narrative to federal agencies, state and regional agencies regarding emergency services, communication infrastructure (failures) and potential future funding. • FEMA-related reimbursement.

Table 6-2: Future Incorporation into Other Planning Mechanisms

Jurisdiction	Activities
Navajo Co	• Plan will be used when updating the Community Wildfire Protection Plans and for Wildland Hazardous Fuels grant opportunities. • Plan will be used for flood control projects and grant opportunities for flood control. • Plan will be referenced in Homeland Security grant applications that apply to terror related mitigation efforts.
Holbrook	• The plan will be used and referenced when applying for grant funded projects as outlined in the Hazard Mitigation Plan and in future City Code updates.

Table 6-2: Future Incorporation into Other Planning Mechanisms	
Jurisdiction	**Activities**
Pinetop-Lakeside	• Narrative to federal agencies, state and regional agencies regarding emergency services, communication infrastructure (failures) and potential future funding. • State and/or FEMA-related reimbursement. • Response purposes regarding Hazard Categories pertaining to all categories, but more specifically for the Town: flooding, wildfire and winter storm, transportation networks (weather, wildlife fire and hazardous materials incidents) and possibly levee failure associated with Woodland Lake. • During last year's fire season, the Town uploaded FEMA rates, in the event of a major catastrophic event; the Town is now more prepared for rapid response. • The plan catalogues staff, resources, planning documents and legal/regulatory capabilities the Town.
Show Low	• The plan will be used and referenced when applying for grant funded projects as outlined in the Hazard Mitigation Plan and in future City Code updates. • Will use Plan for Capital Improvement Planning efforts.
Snowflake	• The plan will be used and referenced when applying for grant funded projects as outlined in the Hazard Mitigation Plan and in future Town Code updates.
Taylor	• The plan will be used and referenced when applying for grant funded projects as outlined in the Hazard Mitigation Plan and in future Town Code updates.
Winslow	• The plan will be used and referenced when applying for grant funded projects as outlined in the Hazard Mitigation Plan and in future City Code updates.

The Plan will continue to function as a standalone document subject to its own review and revision schedule. The Plan will also serve as a reference for other mitigation and land planning needs of the participating jurisdictions. Whenever possible, the jurisdictions will endeavor to incorporate the risk assessment results and mitigation measures identified in the Plan, into existing and future planning mechanisms. This incorporation may include but not limited to natural resources and safety elements of general and comprehensive plans, adding or revising building codes and zoning and subdivision ordinances.

There are several challenges to incorporating the Plan its elements into other planning efforts. First it is not always possible due to the time periods represented in other plans or lack of planning efforts due to the small size of the communities in this Plan. Some of the planning efforts may not require regular updating due to the slow growth experienced in the Planning Area. However, the Planning Team is committed to publicizing the Plan when approved to ensure when community plans and programs are reviewed and/or updated it is used as a resource.

6.3 Continued Public & Stakeholder Involvement

Table 6-3: Continued Public/Stakeholder Involvement	
Navajo County	• Continue to maintain a website that will include a copy of the current Plan, allow for comment, respond to inquiries and comment on development plans as well as other mitigation efforts. • Make available the mitigation brochures and other information produced and provided by DEMA at the Navajo Co Complex and other related offices throughout the County. • Participation in, and distribution of, hazard mitigation planning materials at: volunteer meetings, city/town council meetings, and at the annual County Fair. • Annual presentation to the Board of Supervisors summarizing annual review findings on the hazard mitigation plan and summarizing noteworthy mitigation activities.
Holbrook	• Make available the mitigation brochures and other information produced and provided DEMA at City Hall. • Public notification of impending hazard mitigation project or activities through regular city council processes.
Pinetop-Lakeside	• Maintain a permanent website that will include a link to a copy of the current Plan, allow stakeholders to comment on mitigation planning efforts, respond to citizen inquiries, and comment on development plans as well as other mitigation efforts. • Attend planning fairs that include the dissemination of public information regarding the dangers of the Plan hazards. • Conduct Emergency Management Community Information Exchange (EMCIE) meetings with all local emergency management professionals on a regular basis, and discuss hazard mitigation events. • Conduct public outreach in schools to educate students on the various natural and manmade hazards through local fire districts. • Conduct public outreach meetings when re-mapping of floodplain areas is conducted and distribute Floodplain Management brochures at public information distribution locations throughout Town offices and departments, and at neighborhood meetings. • Make available the mitigation brochures and other information produced and provided DEMA, at the Town Hall and Town Library.
Show Low	• Develop and provide brochures regarding threats on our Hazard Mitigation website. • Continue to improve the CRS program by upgrading the City's rating. • Attend planning fairs that include the dissemination of public information regarding the dangers of the Plan hazards • Finalize the reverse 911 system for the Show Low Lake evacuation plan. • Conduct public outreach in schools (Kids Rock) to educate students on the hazards. • Conduct public outreach meetings when re-mapping of areas is conducted. • Maintain a page on the City website including a copy of the current Plan, allowing the submittal of citizen comments, and staff response to citizen inquiries. This page will be monitored and updated by the City's Planning Team Representative. • Continue to distribute Floodplain Management brochures at public information distribution locations throughout City offices and departments, and at neighborhood meetings. • Develop and distribute Hazard Mitigation brochures at public information distribution locations throughout City offices and departments, the City website, and at neighborhood meetings. • Provide floodplain related hazard and mitigation information to the general public upon request. Post request forms on the City website. • Provide mitigation activity and floodplain management news releases to local news media. • Participation in, and distribution of, hazard mitigation planning materials

Table 6-3: Continued Public/Stakeholder Involvement	
Snowflake	• The Town will publicly report on the progress of ongoing floodplain activities, most notably the Northern Solution. • The Town will facilitate meeting to inform the public of existing floodplains, areas of special flood hazard, and issues pertaining to localized drainage. • The Town will post on the town website, flood plain requirements and • Information as to floodplain enforcement.
Taylor	• Provide annual public safety information in connection with Fire Prevention Week. • Continue to make mitigation materials, the Plan, and other hazard related public awareness information available on the Town's website.
Winslow	• Annually provide a news release to local news media related to mitigation activities and floodplain management. • Make available the mitigation brochures and other information produced and provided by DEMA, at the Town Hall and Town Library.

APPENDIX A: PLAN TOOLS

Acronyms

ADEM	Arizona Division of Emergency Management
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
ARS	Arizona Revised Statutes
ASCE	American Society of Civil Engineers
AZSERC	AZ State Emergency Response Commission
ASLD	Arizona State Land Department
ASU	Arizona State University
AZGS	Arizona Geological Survey
BLM	Bureau of Land Management
CAP	Central Arizona Project
CAP	Community Assistance Program
CFR	Code of Federal Regulations
CRS	Community Rating System
CWPP	Community Wildfire Protection Plan
DEMA	Arizona Department of Emergency and Military Affairs
DFIRM	Digital Flood Insurance Rate
DMA 2000	Disaster Mitigation Act of 2000
DOT	Department of Transportation
EHS	Extremely Hazardous Substance
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FCDMC	Flood Control District of Pinal County
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance Grant Program
GIS	Geographic Information System
HAZUS-99	Hazards United States1999
HAZUS-MH	Hazards United States Multi-Hazard
IFCI	International Fire Code Institute
LEPC	Local Emergency Planning Committee
MMI	Modified Mercalli Intensity
NCDC	National Climate Data Center
NDMC	National Drought Mitigation Center
NESDIS	National Environmental Satellite, Data and Information Service
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHC	National Hurricane Center

NIBS	National Institute of Building Services
NID	National Inventory of Dams
NIST	National Institute of Standards and Technology
NSF	National Science Foundation
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
NWCG	National Wildfire Coordination Group
NWS	National Weather Service
PSDI	Palmer Drought Severity Index
RL	Repetitive Loss
SARA	Superfund Amendments and Reauthorization Act
SRLP	Severe Repetitive Loss Properties
SRL	Severe Repetitive Loss
SRP	Salt River Project
UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
VA	Vulnerability Analysis
WUI	Wildland Urban Interface

APPENDIX B: PLANNING PROCESS DOCUMENTATION

Catrina Jenkins

Subject:	Navajo County multi-jurisdictional Hazard Mitigation Plan Update Kick Off Meeting
Location:	Taylor Fire Station, 411 Papermill Road
Start:	Tue 7/19/2016 10:00 AM
End:	Tue 7/19/2016 12:00 PM
Recurrence:	(none)
Meeting Status:	Accepted
Organizer:	Mary Jane Springer
Required Attendees:	'Ray Alley-Holbrook City Manager'; 'Stephen Pauken'; 'Ed Muder'; Brian Richards <brian@ci.snowflake.az.us> (brian@ci.snowflake.az.us); David Sargent; 'Gus Lundburg - Taylor Town Manager'; Chief Mark Jackson; jshelley@showlowaz.gov; 'karend@winslowaz.gov'; lscarber@stpd.org; James Molesa; Nathan Christensen; Captain Gary Phelps (GPhelps@azdps.gov); Tim Webster; 'Cary Simpson '; Willie Nelson; clint@tayloraz.org; Richard Upham (chief@hofdaz.com); 'chief@sunvalleyfire.com'; 'Rusty Despain'; Jim Morgan; Bryan Savage; Jerry McGraw; 'james.hernandez@ci.winslow.az.us'; Paul Saufkie; 'Harland C. Cleveland'; Bill Bess; Rick Denton; Becky Petersen; 'mpatterson@pinetoplakesideaz.gov'; 'tim.westover@ci.winslow.az.us'; 'bkopp@showlowaz.gov'; 'rsullivan@ci.holbrook.az.us'; 'CBagnoli@azgfd.gov'; Gary Strickland; Darrell Craig; 'KCampbell@azdot.gov'; Jeff Lineberry; Adam Wolfe; 'Sue Austin'; 'yr1@azdeq.gov'; Jeff Hankins (Jeffrey.Hankins2 @bnsf.com); 'John.Padilla@aps.com'; Nic Nunn-Faron; Dave Sherman; 'rmcarthur@summithealthcare.net'; 'Mike Norman'
Optional Attendees:	'Clay Wood'; 'Kymberle O'Farrell'; 'Douglas Gilchrist'; Sandra Phillips; 'James Hernandez'; 'Bruce Best'; Catrina Jenkins; Jennifer Flake; Kathrine Nunn

Just a **reminder** that the Hazard Mitigation Plan Kick-off meeting will be held next Tuesday July 19th at 10:00 at the Taylor Fire Station Located on Papermill Rd. We hope to see you all there!

Thank you!
Catrina Jenkins

Hello Regional Partners!

You are being contacted to participate in the development of the Navajo County multi-jurisdictional Hazard Mitigation Plan Update that will help identify strategies to reduce or mitigate the risk of natural hazards within our communities. Its successful completion will also mean access through grants for FEMA mitigation funding. Overall, the planning process will:
a) identify and profile the Communities' risk to natural hazards;
b) track past mitigation efforts;
c) develop goals, objectives and actions to reduce the risk; and
d) involve a comprehensive group of stakeholders including neighboring jurisdictions, businesses, non-profits, state/federal agencies and academic institutions in its development.

1

You and your organization are being asked to participate because of past participation in similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. Once a draft plan is developed, (estimated to be Fall, 2016), we would like you to review it and provide comments.

If participation in this planning process is more appropriate for someone else in your organization, please forward their name and contact information to catrina.jenkins@navajocountyaz.gov

The point of contact for the County on this project is Catrina Jenkins, Navajo County Emergency Management Coordinator. AECOM has been contracted by the County to develop this plan. On behalf of the County, we would like to invite you to attend the Hazard Mitigation Plan Stakeholder kickoff meeting scheduled on June 22, 2016, at 10AM. The meeting will be held at the Snowflake Fire Station, 325 West 4th Street South, Snowflake, Arizona 85937. At the meeting, we will have a brief overview of the planning process and then will provide some key information for you to review. The overview will help you understand what kind of information we are looking for and for us to learn the most effective ways to support and promote risk reduction in your community. The planning process does not require a great deal of your time, just feedback at critical points in the plan development. Thank you for your support and participation. Please contact me with any questions at mary.springer@navajocountyaz.gov or call 928-524-4046.

Thank You,

Mary Jane Springer
Navajo County Emergency Management

AGENDA

Navajo County Hazard Mitigation Plan
Kickoff Meeting
July 19, 2016 – 10AM-11:30 AM

1) Introduction	Mary Springer, Navajo Co.
2) Navajo County Hazard Mitigation Plan Team	Mary Springer, Navajo Co
3) Scope and Objectives of Mitigation Plan	Jim DeAngelo, AECOM
4) Overview of the Hazard Mitigation Planning Process	Jim DeAngelo, AECOM
5) Complete Questionnaire	Attendees
6) Action Items	Jim DeAngelo, AECOM Mary Springer, Navajo Co.
a) Data Collection b) Communication Methods c) Schedule d) Public Outreach	
7) Open Discussion	Jim DeAngelo, AECOM
8) Adjournment	Mary Springer, Navajo Co.

EM PUBLIC SAFETY, PUBLIC TRUST

Date: 7-19-16 Meeting Title: Hazard Mitigation Kick off

Time: 10 Am Location: Taylor FD

Facilitator: Jim DeAngelo Signature:

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out
BILL BESS	[signature]	N	928 524 4106	bill.bess@navajocountyaz.gov	
BRUCE BEST	[signature]	N	928 940-0008	bbest@[illegible]healthcare.net	
DAVID SHERMAN	[signature]	N	928 Cell 242-0648	WMARMY@CABLEONE.NET	
Mary Springer	[signature]	Y	928 243-2584	mary.springer@navajocountyaz	10 Am
Clint Bunder	[signature]	N	928 536-7900	clint@taylorAZ.org	10
Bill Kopp	[signature]	N	928 242-8736	bkopp@[illegible] ShowlowAZ.GOV	10:00
Richard Wallace	[signature]	N	928 205-9882	RWALLACE@PINETOPFIRE.com	1000
Jim Morgan	[signature]	N	480-[illegible]-8561	JMorgan@PINETOPFIRE.com	1000
[illegible] Schlesinger	[signature]	Y	241-0593	robert.Schlesinger@navajocountyaz.gov	1000
Jenn Flake	[signature]	Y	532 6050	jennifer.flake@navajocountyaz.gov	10:00
Yvonne Rodriguez	[signature]	N	602 771-4163	YR1@azdeq.gov	10:24
Kathrine Nunn	[signature]	N	(928) 368-8696	Knunn@pinetoplakesideaz.gov	10:20
Mary French Jones	[signature]	N	928 368-8696x205	mjones@pinetoplakesideaz.gov	10:20

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through Navajo County Office of Emergency Management. (Return this form to Navajo County Emergency Management 928-524-4163)

Total Hrs.

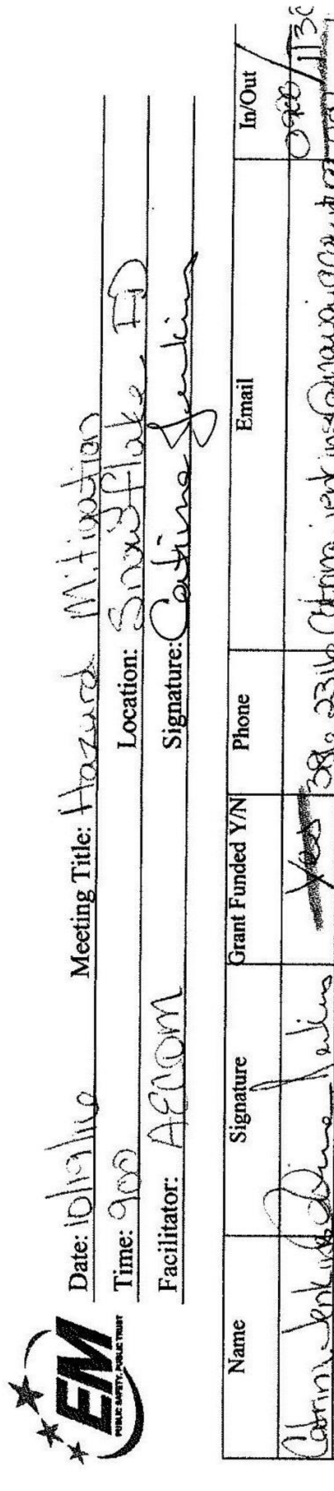
NAVAJO COUNTY
EMERGENCY MANAGEMENT & Preparedness
P.O. Box 668
Holbrook, AZ 86025
(928)524-4163 ▪ FAX (928)524-4787

Mary Springer, Director
Jennifer Flake, Community Outreach Specialist
Robert Schlesinger, Training Officer
Catrina Jenkins, Deputy Director

Agenda

Navajo County Hazard Mitigation Plan
October 19, 2016 at 9:00
Snowflake Fire Station

- Introduction
- 2011 Mitigation Plan Review
- Plan actions needed by participants
- Next steps
- Questions?
- Adjournment



Date: 10/19/16 Meeting Title: Hazard Mitigation
Time: 900 Location: Snowflake FD
Facilitator: AECOM Signature: Catrina Jenkins

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out
Catrina Jenkins	Catrina Jenkins	Yes	386-2316	Catrina.jenkins@navajocountyaz.gov	0900 / 1130
Doyce Stuart	Doyce Stuart	No	524-6225	doyce.stuart@ci.holbrook.az.us	0900
Bobby Martin	[signature]	N	243-0324	rmartin@stpd.org	0900
Becky Petersen	Becky Petersen	NO	5244055	rebecca.petersen@navajocountyaz.gov	900
Bob Schlesinger	R Schlesinger	Yes	241-0593	robert.schlesinger@navajocountyaz.gov	9:05
DAN Dymond	Dan Dymond	N	928 367-4281	ARIZONA GAME & FISH DEPT ddymond@azgfd.gov	0900
NATHAN CHRISTENSEN	NWChristensen	NO	524-4761	nathan.christensen@navajocountyaz.gov	0859
BRIAN RUSSELL	TMFMD	NO	537-5100	brussell@timbermesafire.org	0900
Ken Arend	Winslow P.D	NO	928-289-1452	Karend@winslowaz.gov	0900
Clint Burden	TAY-SNOW FD	N	928-536-7900	Clint@taylorAZ.org	0900
Quentin Bogaly Sr	Winslow PD	NO	928-289-3451	Qbogaly@winslow.az.gov	0900
Mary Springer	[signature]	Yes	928-243-2584	mary.springer@navajocountyaz.gov	0900
BILL BESS	W Bess		928-524-4106	bill.bess@navajocountyaz.gov	0900
JIM Morgan	[signature]	NO	928-367-2199	JMorgan@pinetopfire.com	0900

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through Navajo County Office of Emergency Management. (Return this form to Navajo County Emergency Management 928-524-4163)

Total Hrs. 27.5

EM

Date: 10/19/16 Meeting Title: Hazard Mitigation

Time: 0900 Location: Snowflake FD

Facilitator: AECOM Signature:

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out	
Nic Numfor	[illegible]	N	928-266-2157	nic.numforon@redcross.org	900	11[30]
Tim Westover	[illegible]	No	928-587-5758	Twestover@winslowaz.gov	9:10	
Jennifer Flake	Jennifer Flake	[illegible]	532-6050	jennifer.flake@navajocountyaz.gov	9:00	
Steve Parker	[illegible]	N	289-1414	sparker@winslowaz.gov.	10:20	
Adam Wolfe	[illegible]	N	928 368-3258	adam.wolfe@navajocountyaz.gov	9:15	

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through NavajoCounty Office of Emergency Management. (Return this form to Navajo County Emergency Management ~~928-524-4163~~)

Total Hrs. 7.25

AGENDA

Navajo County Hazard Mitigation Plan
3rd Meeting
March 22, 2019 – 10AM-12:00 PM

1) Introduction	Mary Springer, Navajo Co.
2) Mitigation Plan Review	Jim DeAngelo, Attendees
Risk Hazard Review	
Mitigation Goals	
Mitigation Action Review	
Capabilities Discussion	
3) Plan Update/ Incorporation and Previous Actions	Jim DeAngelo, Attendees
4) Schedule, Next Steps	Jim DeAngelo, Mary Springer
5) Open Discussion	All
6) Adjournment	Mary Springer, Navajo Co.

Date: 22 March 2017 **Meeting Title:** Hazard Mitigation Final Draft Plan Review

Time: 10:00AM **Location:** Taylor-Snowflake Fire Station #2

Facilitator: Mary Springer **Signature:** Catina Jenkins

11:50

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out
Gary Phelps	[illegible]	N	928-606-0003	GPhelps@AZDPS.gov	10:00
OTTO WALTERS	Otto D Walters	N	928-524-6177	OWALTERS@AZDPS.GOV	10:00
Dayce Stuart	[illegible]	N	928-524-6225	d.v.stuart@ci.holbrook.az.us	10:00
Bob Schlaswig	[illegible]	Y	928-524-4459	robert.schlaswig@navajocountyaz.gov	10:00
Jennifer Flake	Jennifer Flake	Y	928-524-4460	jennifer.flake@navajocountyaz.gov	10:00
Matt Patterson	[illegible]	Y	928-358-7180	MPATTERSON@pinetoplakesideAZ.gov	9:50
Mary French Jones	[illegible]	Y	928-368-8696	mjones@pinetoplakesideaz.gov	9:50
Rebecca Petersen	Rebecca Petersen	N	928 524 4055	rebecca.petersen@navajocountyAZ.gov	10:00
BRIAN RUSSELL	[illegible]	N	928-537-5109	brussell@timbermesafire.org	10:00
Allen Davis	[illegible]	N	(928) 536 7366	allen@tayloraz.org	10:00
BILL BESS	W R Bess	N	928 524-4106	bill.bess@frontiernet.net	10:05 / 12:00
BILL KOPP	[illegible]	N	928 532-4081	bkopp@showlowaz.gov	10:00

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through NavajoCounty Office of Emergency Management. (Return this form to Navajo County Emergency Management ~~928-524-4163~~)

Total Hrs.

Date: 22 March 2017 Meeting Title: Hazard Mitigation Final Draft Plan Review

Time: 10:00AM Location: Taylor-Snowflake Fire Station #2

Facilitator: Mary Springer Signature: Catrina Jenkins 11:52

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out
Larry Scarberry		U	536-7500	lscarberry@stpd.org	10:00
Mary Springer		Y	928-243-2584	mary.springer@navajocountyaz.gov	10:40 am
Catrina Jenkins	Catrina Jenkins	Y	928 386-2316	catrina.jenkins@navajocountyaz.gov	10:00
Adam Wolfe	Adam Wolfe	Y	928 348-3[illegible]	adam.wolfe@navajocountyaz.gov	10:00

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through NavajoCounty Office of Emergency Management. (Return this form to Navajo County Emergency Management ~~928-524-4163~~)

Total Hrs.

MEETING SIGN-IN

► Navajo County Hazard Mitigation Plan, 3rd Meeting

► TIME: March 22, 2017 @ 10:00AM
PLACE: Snowflake Fire Station,
325 West 4th St S, Snowflake, AZ 85937

Name	Title	Organization	Phone	Email
Mary Springer	Navajo Co. Emergency Management Director	Navajo Co.	928.524.4046	Mary.springer@navajocountyaz.gov
~~Jim DeAngelo~~	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
Jennifer Flake	NCPHEP Coord.	Navajo Co.	928-532-6050	jennifer.flake@navajocountyaz.gov
~~Joyce Stunt~~	~~Safety Officer~~ Hotshots	Holbrook	928-524-6225	j.w.stunt@ci.holbrook.az.o
Bob Schlesinger	NCPHEP	Navajo Co.	928-524-4458	robert.schlesinger@navajocountyaz.gov
Willie Nelson	TSFMD Assist. Chief	TSFMD	928 457 7848	FIRE@TSFMDAZ.org

6501 Americas Parkway NE, Suite 900
Albuquerque, NM 87110-5311
(505) 855-7500 / (505) 855-7555 fax

NAVAJO COUNTY
EMERGENCY MANAGEMENT & Preparedness
P.O. Box 668
Holbrook, AZ 86025
(928)524-4163 ▪ FAX (928)524-4787

Mary Springer, Director

Jennifer Flake, Community Outreach Specialist
Robert Schlesinger, Training Officer

Catrina Jenkins, Deputy Director

Agenda

Multi-Jurisdiction Hazard Mitigation Plan Meeting

May 31, 2017 @ 2:00
Chevelon Conference Room, Holbrook

- Review mitigation actions and plan for final draft

EM — PUBLIC SAFETY, PUBLIC TRUST

Date: 5-31-17 Meeting Title: Multi-Jurisdictional Hazard Mitigation

Time: 2:00 pm Location: Chevelon Canyon - Holbrook

Facilitator: Curtis Cook Signature: [signature]

Name	Signature	Grant Funded Y/N	Phone	Email	In/Out
Mary Springer	[signature]	Y	928-243-2584	mary.springer@navajocountyaz.gov	14:00
Catrina Jenkins	[signature]	Y	928 386 2316	catrina.jenkins@navajocountyaz.gov	1400
Bob Schlesinger	[signature]	Y	928 241 0593	robert.schlesinger@navajocountyaz.gov	1400
BILL BESS	[signature]	N	928 524 4106	bill.bess@navajocountyaz.gov	1400
Doyce Stuart	[signature]	N	928-241-1567	d.v.stuart@ci.holbrook.az.us	1400
Tim Westover	[signature]	N	928-587-5758	Twestover@winslowaz.gov	2:00
Larry Scarber	[signature]	N	928-536-7500	L.scarber@stpd.org	2:00
Mary French-Jones	[signature]	N	928 368 8696	mjones@pinetoplakesideaz.gov	2:00
J Curtis Cook	[signature]	N	480 341 2340	jeffrey.cook@aecom.com	2:/3:30

PLEASE ATTACH AGENDA OR SUPPORTING DOCUMENTS FOR THIS ACTIVITY. These hours will be utilized in support of the Emergency Management Performance Grant through Navajo County Office of Emergency Management. (Return this form to Navajo County Emergency Management 928-524-4163)

Total Hrs.

APPENDIX C: PUBLIC OUTREACH

PUBLIC NOTICE / INVITE

Navajo County has been working to update its Hazard Mitigation Plan. We would like to invite you, the citizens of Navajo County, to attend a Public Hazard Mitigation Plan Meeting scheduled **March 22, 2017**. The meeting is scheduled for **10:00 AM**. The meeting will be held at the **Snowflake Fire Station, located at 325 West 4th Street South, Snowflake, AZ 85937**

The current plan and a DRAFT updated plan is available for review on the county web page at www.navajocountyaz.gov under the Quick Links section. If you have additional questions or have comments on either plan please contact Mary Jane Springer, the Navajo County Emergency Management Director at 928-524-4046. The DRAFT plan incorporates the information received from the previous stakeholder meetings and the Arizona State Mitigation Plan.

At the meeting, we will have a brief overview of the planning process and then review the draft plan. Comments will be collected for consideration. Please come prepared to discuss specific changes to the draft document. The comment period will continue through the meeting.

The Classifieds

Continued From Previous Page

Help Wanted

Public Notices

Continued From Page 11

NAVAJO COUNTY NOTICE OF INVITATION FOR BIDS IFB NO. F17-03-01

NOTICE (for publication) ARTICLES OF ORGANIZATION HAVE BEEN FILED IN THE OFFICE OF THE ARIZONA CORPORATION COMMISSION FOR I. Name: HANSEN'S AUTO LLC

ELECTION FINANCIAL STATEMENT CITY OF HOLBROOK, ARIZONA July 1, 2016 thru December 31, 2016

REVENUE	
General	2,360,527
Utility	944,923
HURF	341,689
Lodger's Tax	55,316
Grants	333,528
Total Revenues	4,035,984
EXPENSES	
General	2,228,612
Utility	920,101
HURF	228,102
Lodger's	98,228
Grants	273,035
Total Expenses	3,748,078

Navajo County and ARIZONA@WORK Northeastern Arizona Innovative Workforce Solutions Request for Proposals RFP F17-03-08 For ARIZONA@WORK Job Center One-Stop Operator July 1, 2017 TO JUNE 30, 2021

Public Notice Regarding Application For Federal Funds under the Individuals with Disabilities Education Improvement Act of 2004 (IDEA)

ARGUMENTS FOR OR AGAINST BALLOT MEASURES ON THE MAY 16, 2017 CITY OF HOLBROOK GENERAL ELECTION

All pro/con arguments must be received by March 27, 2017, 5:00 p.m. at the Holbrook City Clerk's Office 465 1st Avenue, Holbrook, AZ 86025

Filing guideline for ballot measure argument

Before filing the argument, please make sure:

- The argument is 300 words or less
- The argument is written exactly how the filer wants it to appear in the pamphlet. The argument will be entered into the pamphlet verbatim; no grammatical or textual changes will be made to the document.
- The argument contains the original signature (no faxed signatures) of each person sponsoring it.

Signature/name requirements:

- For arguments filed and paid for by an **individual**, only the signature of the individual is required
- Arguments sponsored by an **organization** or **corporation** (NOT a Political Committee) must be signed by at least TWO executive officers and must be identified by a group
- Arguments sponsored by a **political committee** must be signed by the Committee's Chairman or Treasurer and must be identified by a Committee Name.

All arguments must include the name, address or P.O. Box, city and telephone number of the person(s) signing it. Only the name of the person(s) signing will appear in the publicity pamphlet.

No arguments will be accepted after Monday, March 27, 2017, 5 p.m.

Ballot will contain:

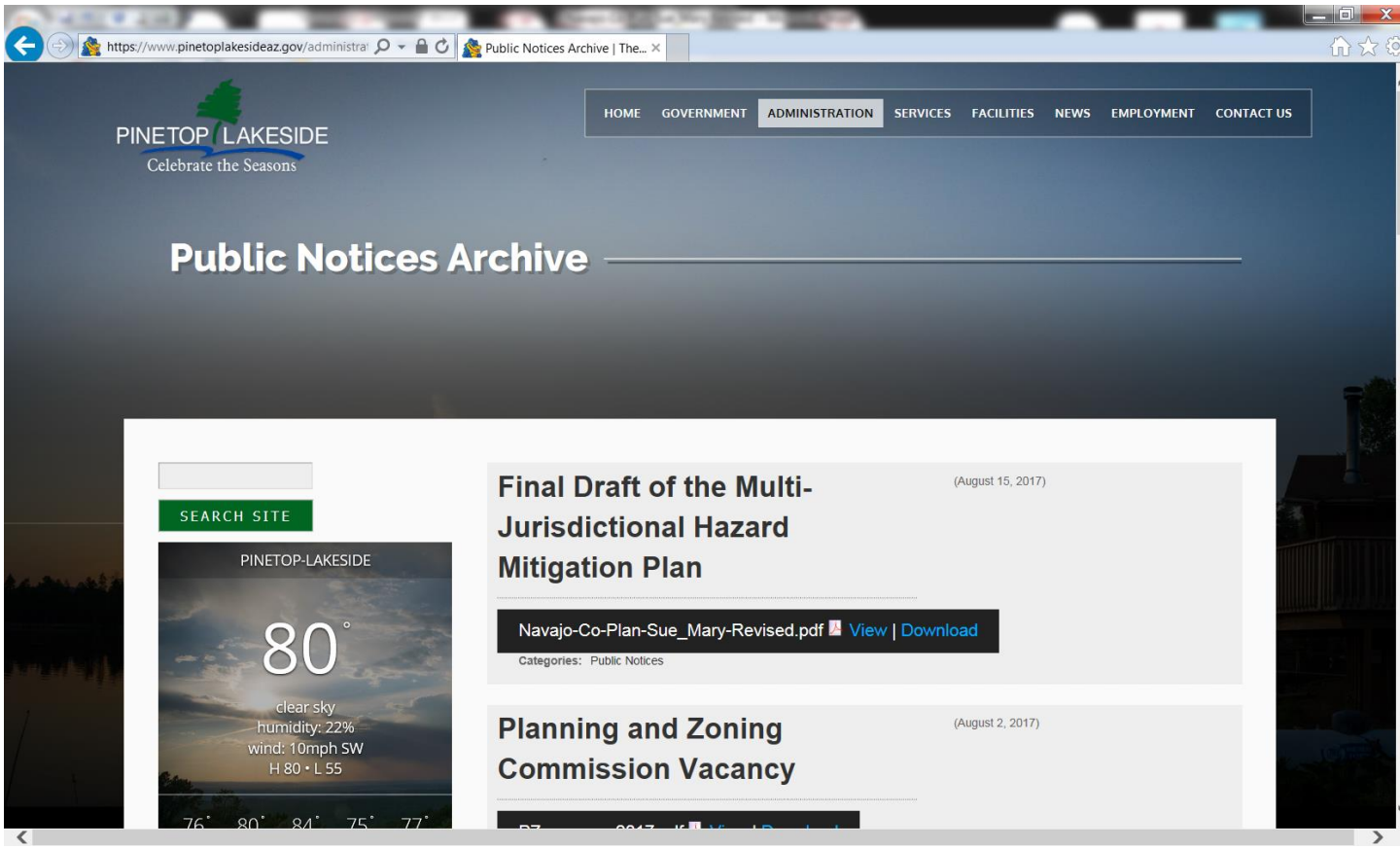
A question to approve the collection of primary property taxes.

Public Notice/ Invite

Navajo County has been working to update its Hazard Mitigation Plan. We would like to invite you, the citizens of Navajo County, to attend a Public Hazard Mitigation Plan Meeting scheduled March 22, 2017. The meeting is scheduled for 10:00 AM. The meeting will be held at the Snowflake Fire Station, located at 325 West 4th Street South, Snowflake, AZ 85937

The current plan and a DRAFT updated plan is available for review on the county web page at www.navajocountyaz.gov under the Quick Links section. If you have additional questions or have comments on either plan please contact Mary Jane Springer, the Navajo County Emergency Management Director at 928-524-4046. The DRAFT plan incorporates the information received from the previous stakeholder meetings and the Arizona State Mitigation Plan.
At the meeting, we will have a brief overview of the planning process and then review the draft plan. Comments will be collected for consideration. Please come prepared to discuss specific changes to the draft document. The comment period will continue through the meeting.


http://ci.snowflake.az.us/
Town of Snowflake, Arizona...
The Town of
SNOWFLAKE, AZ
Welcome to
SNOWFLAKE
Founded 1878
Home
Town Hall
Departments
Economic Development
Community Info
Arizona's White Mtns
Town Code
Links
Contact Us
Welcome to Snowflake, Arizona
Located in north central Arizona, the Town of Snowflake is a growing hub of activities for businesses and visitors. Central to many of the region's attractions, between prehistoric and native cultures to the north, to the forested White Mountains to the south, you'll find that the pioneer spirit still lives on. Come for a day; stay for a lifetime… Snowflake is the heart of America where neighbors care and there is always a friendly greeting!
A pleasant 3-hour drive from Phoenix or Tucson, or 2 hour drive from Flagstaff, you'll find that the relaxed lifestyle of Snowflake, the friendly community, and the diverse recreational opportunities make Snowflake an ideal location to visit and live.
Notices:
The Navajo County Hazard Mitigation Plan is now available for review and public comment. Please direct questions to the Navajo County Emergency Management team. You can visit the Navajo County page to access these links as well.
SEAL OF NAVAJO COUNTY ARIZONA
AZ Cities @ Work Video
POLICE
VISA
Utility Payment Options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ADMINISTRATION
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PINETOP-LAKESIDE
80°
clear sky
humidity: 22%
wind: 10mph SW
H 80 • L 55
Final Draft of the Multi-Jurisdictional Hazard Mitigation Plan
(August 15, 2017)
Navajo-Co-Plan-Sue_Mary-Revised.pdf View | Download
Categories: Public Notices
Planning and Zoning Commission Vacancy
(August 2, 2017)


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COUNTY SPOTLIGHT DETAILS
County Spotlight Details
Home > Navajo County Hazard Mitigation Plan
Navajo County Hazard Mitigation Plan
Posted on Tuesday, August 15, 2017
The Navajo County Hazard Mitigation Plan is now available for review and public comment. Please direct questions to the Navajo County Emergency Management team.
View All Stories
View Service Locations
Contact Us

APPENDIX D: PAST MITIGATION STRATEGY ASSESSMENT

Navajo County Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• County, Development Services, Planning & Zoning, Building Safety • $242,000 • Ongoing - As Needed	In Progress	Keep	This is a continuous effort and will remain on the plan indefinitely.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Co Emergency Mgmt • $10,000 • Ongoing - As Needed	In Progress	Keep	Navajo County along with the U of A Cooperative Extension has been providing educational and preventative activities to citizens to reduce the potential of wildfire events.
8.A.3	Adopt Governor's Drought Mitigation Plan	Facilitate the adoption of the Governor's Drought Mitigation Plan	• County Board of Supervisors • $1,000 • Ongoing	In Progress	Keep	The plan has not been adopted.
9.B.1	Non-reporting HAZMAT locations	Continue to locate non-reporting HazMat locations	• Co Emergency Mgmt / LEPC • $1,000 • Ongoing - As Needed	In Progress	Keep	NCEM will continue to monitor Tier II reports and contact those facilities that may need to file a report due to threshold levels of hazardous materials stored at the facility.
2.A.1	Hazard Recognition Education	Develop resource materials describing diseases associated with rural environments and life-style—how to recognize potential hazards and symptoms, and how to prevent infection	County Emergency Management $1,500 • Ongoing - As Needed	In Progress	Keep	Co Health Dept is working on producing an Epidemiology Plan. The Co nurses are taking a series of courses related to disaster surge for public health nurses, including Introduction, Preparedness, Response and Recovery. The County Health Dept has several brochures including: Pan flu brochure; H1N1 brochure; Bio- Terrorism Animal Brochure; Water Security booklet; Emergency Shelters booklet: plus several others
2.A.2	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• County and Local Law Enforcement / Emergency Management $3,000 Ongoing - As Needed	In Progress	Keep	NCEM has recently upgraded the Communicator/GeoCast system with a self-registration portal that allows the public to register their cell phones and/or email in order to subscribe. It is called Ready Navajo County. It relays instructions on current incidents to include evacuation instructions if needed. NCEM will also continue to utilize public media such as radio and television but has also added Facebook and 311 to the public information.

Navajo County Assessment of Previous Plan Mitigation Measures

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
8.A.1	Water Summit	Sponsor interagency and public seminars to coordinate efforts to mitigate damage and losses due to drought and develop a drought mitigation plan	• County Board of Supervisors □ $2,000 • As Needed	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.
7.B.1	Improve Winslow Levee System	Decertify levee and improve to reduce levee break in future flooding events	• County Public Works □ $66,000,000 □ 2020	In Progress	Keep	Navajo County has entered into a Feasibility Study Cost Share Agreement with the US Army Corps of Engineers. The study is scheduled to be completed by 2014 and will provide an array of alternatives to reduce the flood risk in Winslow.
8.A.2	Water Conservation Standards	Develop and adopt countywide water conservation standards, citing USGS precipitation records	• County Board of Supervisors □ $25,000 • Unknown	No Action	Keep	The Local Drought Impact Group has not been meeting and therefore no recommendations were made to the Board of Supervisors.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• AZ State Fire and Forestry, U of A extension service □ $250,000 • Ongoing Needed	In Progress	Keep	The program this item was based upon was completed. However new grant funding has become available and the program will resume during the upcoming plan period.
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• County Board of Supervisors □ $3,500 • Ongoing	In Progress	Keep	NCEM will work with the cities and towns to adopt the Mutual Aid Agreements for all hazards.
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• County Sheriff's Office □ $1,500,000 • Ongoing	Complete	Keep	Navajo County has initiated discussions and overview of agreements for obtaining information. Funding is still a limitation for the inclusion of Navajo County in the network.

Holbrook's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Planning & Zoning and Code Enforcement • Staff time • Ongoing - As Needed	In Progress (Ongoing)	Keep	code enforcement
5.B.2	Treatment Plant Levee	Install riprap on entire Leroux Wash side and basic remediation	• City Public Works □ $100,000 • June 2008	No Action	Keep	As budget allows
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Holbrook Volunteer Fire Dept □ $30,000 • Annual	In Progress	Keep	Ongoing training of fire personnel
8.B.2	Establish new water supply points	Drill three new wells	• City Public Works Dept □ $500,000 • June 2014	In Progress	Keep	1 well has been drilled on McLaws Road, Other 2 wells pending available funding
11.B.1	Infrastructure Security	Secure all water/wastewater and sanitation facilities	• City Public Works Dept □ $50,000 • June 2008	Complete	Delete	Installed new security gate at wastewater treatment plant in mid 2010 at approximate cost of $2,000. Wells 4 & 5 still need fencing.
6.B.1	Establish regional wildfire fighting team	Put Firefighting team together to assist neighboring communities with wildfires	• Navajo County □ $500,000 • Ongoing - As Needed	No Action	Keep	As time and assets permit
7.B.1	Erosion Control on Little Colorado River	Maintain erosion protection along the levees of the Little Colorado River	• City Public Works □ $50,000 • Ongoing - As Needed	Maintain as Necessary	Keep	Public Works will monitor for maintenance activities annually
5.B.4	McLaws Road Flooding/Whiting Wash	Complete Whiting Wash Levee	• City Public Works Dept □ $400,000 • As funds available	No Action	Keep	As funding becomes available

Holbrook's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
6.C.1	Non-native species invasion within drainage ways	Eradicate non-native species from riverbed	• Little Colorado RC&D □ $10,000 • Ongoing - As Needed	In Progress	Keep	As budget permits
7.A.1	Full Time Levee Maintenance Person	Replace part time levee maintenance person with full time employee	• City of Holbrook □ $25,000 • Ongoing	Scope is in Public Works	Keep	Public Works performance tasks
10.B.1	Backup Generators	Buy backup generators for all critical facilities in regards to power and emergency response facilities	• City □ $50,000 • Complete	Complete	Delete	All lift stations police and fire have backup generators city hall and other public works bldg. in process as budget permits
10.A.1	Weather Related Damage Issues	Improve Codes and Code enforcement	• Planning and Zoning □ $25,000 • Ongoing - As Needed	In Progress	Keep	Continued strict code enforcement
5.B.3	Buffalo Street Drainage	Maintain drainage flow channel from 13th Ave to west approximately 1000 feet	• Public Works Dept □ $2,000 • Ongoing	On going	Keep	Routine cleaning of existing drainage of weeds and trash. Dredge with blade and remove debris with loader and dump truck approx 2 day/yr
2.A.1	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• Navajo Co Emergency Mgmt □ $200 • Ongoing - As Needed	In Progress	Keep	Continue NIMS training as needed.
8.A.1	Water Conservation Standards	Develop and adopt citywide water conservation standards, citing USGS precipitation records	• City/ADWR □ $30,000 • Ongoing - As Needed	No Action	Keep	As budget and personnel permit
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• City/ADWR □ $30,000 • Ongoing - As Needed	No Action	Keep	As budget and personnel permit
5.B.6	8th Ave. Drainage (School District)	Manage Drainage impacting area approximately 200'	• City/Navajo Co Flood Control Districts, BIA, ADOT □ $2,000 June 2015	Complete	Keep	Curbing and sidewalk replaced to allow adequate drainage Ongoing cleaning and maintenance of drainage remove dirt and debris every spring

Pinetop-Lakeside's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure.	• 10,000 (Abatement) Staff	In Progress	Revise	Continue zoning codes enforcement: review subdivision plan for compliance with the subdivision code; inspect new construction for IBC compliance.
1.A.3	Wildland/Urban Interface Ordinance	Enforce the currently adopted fire mitigation and wildland/urban interface ordinance	• Community Development Staff • Ongoing	In Progress	Keep	The Town adopted the Forest Health and Fire Protection Ordinances and implements enforcement.
5.B.2	Woods Subdivision	Soil stabilization and erosion protection	• Public Works Staff • June 2022	In Progress	Revise	Establishing vegetation to reduce sediment flow, as funding becomes available.
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• Community Services • As Needed	In Progress	Keep	Implement Forest Health and Fire Protection Ordinance Engage in partnerships for continued education regarding Wildfire.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• Community Development Staff • Ongoing - As Needed	In Progress	Keep	The Town conducts assessments to determine areas of greatest risk. The owners receive Town letter regarding mitigation maintenance. Town will continue to partner with Fire Districts and Navajo County for grant funding to assist owners w/mitigation.
5.A.1	Drainage Master Plan	Develop a drainage master plan for the entire community.	• Public Works $120,000 2022	No Action	Keep	Pursue funding opportunities.
7.A.1	Dam Inundation Seminar	Partner with ADWR to provide public education for dam inundation area/warning systems.	• Public Works / Community Development $50,000 • Future	No Action	Keep	Pursue funding opportunities,

Pinetop-Lakeside's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties.	• Public Safety Staff • Ongoing - As Needed	In Progress	Keep	The Town updates mutual aid agreements annually.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Community Development Staff/Consultant Future 2025	In Progress	Keep	Pursue funding opportunities
9.A.1	Establish Alternate Routes	Implement small area transportation study	• Public Works $4,000,000 • Future - 2025	In Progress	Keep	Pursue funding opportunities.

Show Low's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Development Services, Planning & Zoning, Building Safety • Staff time • Ongoing - As Needed	In Progress	Keep	Keeping up to date on building codes. Permits and inspections are required by City Code.
5.B.2	Replacement of Culvert Crossing on Whipple Road	Enlargement of existing crossing with larger box culvert at Whipple Road and Whipple Wash	• City Public Works • $150,000 • Complete	Complete	Delete	Secured funding. Have a trax number issued by ADOT. Working on hiring a consultant for NEPA
6.B.1	Wildfire Public Education Activities	Expand education activities to include public service announcements, public access TV, website	• $5,000/year • Ongoing - As Needed	In Progress	Keep	Ongoing activity includes community outreach from Timber Mesa Fire and Medical District of TMFMD at public events, PSAs, website, continue to pursue funding.
4.A.1	Adoption of Mutual Aid Agreements for all Hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• County Emergency Mgmt • Staff time • Ongoing - As Needed	In Progress	Keep	Continue to update existing agreements. Pursue new partnerships as opportunities are presented.
6.D.1	Neighborhood Wildfire Assessment	Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures	• City Community Development, Fire Dept • Staff time • Ongoing Maintenance Efforts	In Progress	Keep	Ongoing activity includes community outreach from Timber Mesa Fire and Medical District of TMFMD at public events, PSAs, website, continue to pursue funding.
6.C.1	Wood Disposal Site	Partner with the Sitgreaves Forests Partnership to establish a disposal site for lot cleanup for Wildfires	• City of Show Low • Staff time	No Action	Delete	Private green waste facility established
5.A.1	Drainage Master Plan	Develop a drainage master plan for the entire community	• City Public Works • Staff time • 2020	In Progress	Keep	Some funding in public works budget. Prioritizing smaller drainage projects as budget allows.
6.B.2	Small Diameter Wood Business Recruitment	Partner with the Sitgreaves Forests Partnership to conduct outreach and attract sustainable, small-diameter wood-based businesses into the area	• City Community Development • Staff time • Ongoing - As Needed	In Progress	Keep	Fuel Pellet operation has expanded production capacity.

Show Low's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Statu s**	**Disposition**	**Explanation**
1.A.2	Adopt Fire Resistant Building Code	Adopt through council the Fire Resistant Building Code	• City Building Department • Staff time • Future	In Progress	Keep	City has adopted International Fire Code. Partner with SLFD to review / advise on new construction / remodels for commercial construction.
9.A.1	HAZMAT Enforcement	Coordinate among law enforcement and transportation departments to increase enforcement of HAZMAT transportation codes and regulations	• City Police Department • Staff time • Ongoing - As Needed	In progress	Keep	Continue securing funding.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• City Public Works • Staff time / $50,000 Consultant • Future	In progress	Keep	Continue to seek funding.
7.A.1	Improvements to Show Low Lake Dam	Improve Show Low Lake Spillway so that it is not classified as an unsafe dam	• City Public Works $20,000,000+ • Future	In progress	Keep	Seeking funding for PMF study. Communication with ADWR to pursue funding sources. Have done significant work on an emergency evacuation plan for downstream properties.
6.A.1	State Land Dept Firefighting Contract/Facilities	Partnership with BIA, Forest Service, and local fire districts to train firefighters on wildfires and build a multi-jurisdictional firefighting base at Show Low airport	• City Public Works $4,000,000	In progress	Keep	Seeking funding and partners for fire base at SL airport. Have constructed training mock-up facility for AARF training at SL airport.

Snowflake's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• Town, Development Services, Planning and Zoning and Building Safety • $350,000 • Ongoing - As Needed	In Progress	Keep	Town Council adopted the 2006 International Residential, Building, Mechanical, Plumbing, and Fire codes.
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• Navajo County Emergency Mgmt • $10,000 • Ongoing - As Needed	In Progress	Keep	Contacted Nav. County regarding cost of providing fire services out of Snowflake limits, we were told they would not participate in any cost share.
5.A.1	Pass Drainage Ordinance	Promulgate drainage ordinance through the town council	• Public Works • $5,000 • June 2007	In Progress	Revise	Adopted State Standard 8-99 for individual residential lots. Revised and Adopted Floodplain Management Ordinance
6.D.1	Fire Education Equipment	Acquire trailers, resources, and material for the purposes of education to the public for Wildland Fire	• Fire Department • $100,000 • June 2008	Complete	Delete	Purchased a Fire Sprinkler/Safety House educational trailer. Continue ongoing general education.
6.C.1	Rural Fire Protection Services	Establish IGA's & MAA's with surrounding communities and establish full time personnel	• Fire Department • $50,000 • Ongoing - As Needed	In progress	Keep	
1.A.2	Wildland/Urban Interface Ordinance (Firewise Community)	Research/consider adopting a fire mitigation and wildland/urban interface ordinance	• Fire Department • $25,000 • June 2007	Complete	Delete	Participate with Central Navajo County Wildfire Protection Plan.
8.B.1	Drought Mitigation Plan	Develop a drought mitigation plan	• Public Works • $100,000 • June 2008	In Progress	Keep	The Water Department has a drought plan. Submitted plan to ADWR.
8.A.1	Water Conservation Standards	Develop and adopt citywide water conservation standards, citing USGS precipitation records	• Public Works • $100,000 • June 2008	In Progress	Keep	Project priority reassigned

Snowflake's Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
4.A.2	Training of Staff on National Incident Management Training	Keep staff up to date on training for National Incident Management Training	• Public Safety • $10,000 • Ongoing - As Needed	In Progress	Keep	Requires ongoing effort due to new hires.
5.B.3	Northern Solution Industrial Park Drainage	Provide drainage solution for the Industrial Park drainage problem	• Public Works • $1,500,000 • June 2010	In Progress	Keep	Southern Solution Project completed in 2016. Resolution for Northern Solution passed 2017. Grant application submitted.
6.B.2	Improve Community Fire Suppression System	Improve Community Fire Suppression System to include more fire hydrants, fire flow modeling, and software	• Public Works • $1,000,000 • June 2015	In progress	Revise	Regular hydrant testing ongoing. Repair/Replacement plan in place.
8.B.2	Maintain water supply infrastructure	Rehabilitation of 1 million gallon tank at well #1. Planning rehab of 300K gallon tank at well #3	• Public Works • $200,000June 2020	In progress	Revise	The Town has concentrated on maintenance of existing wells and tanks.
5.B.2	Turley Subdivision Detention	Engineer and construct a detention facility to mitigate peak discharges	• Public Works • $500,000 • June 2008	Complete	Revise	Create ongoing maintenance plan.
5.B.1	Non-native species removal and existing channel cleanup	Removal of non-native species and existing channel cleanup	• Navajo County Flood Control District • $10,000,000	In Progress	Keep	Funding drastically reduced, revisiting project to determine extent of project using available funds.

Taylor Assessment of Previous Plan Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• Town, Development Services, Planning and Zoning and Building Safety • Staff time • Ongoing - As Needed	In Progress	Keep	Adopted 2003 I-codes
10.B.1	Backup Generators and Fuel Supply	Buy backup generators for all critical facilities in regards to power and emergency response facilities	• Public Works / Fire Dept □ $150,000 • June 2008	Revised	Delete	Working on Funding
5.B.2	Airport Wash	Detention, Channelization, install crossings, and general flood control	• Public Works □ $200,000 • W/I 2 yrs of acquiring funding	In Progress	Keep	Met w/ State Land Dept., lands identified & waiting results from them.
7.B.1	Millett Swale	Improve Millett Swale to ADWR standards	• Silver Creek Flood Prevention District □ $2,500,000 • Dependent of private development	In Progress	Keep	Approved plan by ADWR. Working on financing. Revise to reflect
5.B.1	Silver Creek Channelization	Channelize Silver Creek from Taylor Dam to Rock Wall	• Navajo Co Flood Control District • Staff time • Dependent on private development	In Progress	Keep	Volunteer groups clearing out undergrowth so far. No Town expenditures used yet. Revise to reflect that private land owners will fund the work

Winslow's Assessment of Previous Plan's Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
1.A.1	Enforcement of Zoning and Building Code Ordinances	Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, thunderstorm/high wind, and other hazards on new buildings and infrastructure	• City, Development Services, Planning and Zoning and Building Safety • $110,000/year • Ongoing - As Needed	In progress	Keep	Periodic revision as needed
7.C.1	Dam/Levee Break Education	Educate the public on Dam/Levee Failure procedures in the case that the levee system fails	• Navajo Co Flood Control District • $1,000 annually per publication • Ongoing - As Needed	In progress	Keep	Letters were sent to all Winslow Residents in designated 100-year floodplain; and two public informational meetings were conducted with FEMA, Navajo Co & ADWR in 2007 & 2008
4.A.1	Adoption of Mutual Aid Agreements for all hazards	Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties	• Navajo Co Emergency Mgmt • $0 • Ongoing - As Needed	Complete	Delete	We anticipate to adopt the County's Mutual Aid Agreement
5.A.1	Update Drainage Master Plan	Bring Drainage Master Plan up to date with current standards	• Navajo Co &Public Works • $200,000 (for current floodplain study only) • June 2007	Complete	Delete	City Engineer working on phases as needed which include the current levee recertification studies. Studies are tentatively scheduled to be completed in 3-10 yrs
6.A.1	State Land Department Firefighting Contract	Train firefighters on wildfires	• Public Safety • $1,500/person (20 people at least 2 yrs) • Ongoing - As Needed	In progress	Keep	City has signed a contract with the State
10.B.1	Maintain and Upgrade Backup Generators and Fuel Supply System	Maintain and Upgrade Backup Generators and Fuel Supply System for all critical facilities in regards to power and emergency response facilities	• City • $2,000,000 • Ongoing - As Needed	Revised	Delete	New Generator installed at Police Department in 2006 and at Waste Water in 1997. Also, boosters installed in 2001
6.C.1	Nonnative species invasion within drainage ways	Eradicate nonnative species from riverbed	• Navajo Co Flood Control District • $100,000 • Ongoing - As Needed	In progress	Keep	Vegetation along Ruby Wash Diversion Levee was removed through the use of prison labor
2.A.1	Evacuation Procedures Education	Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency	• Public Safety • $1,000/annual publication cost • Ongoing - As Needed	New	Keep	Public outreach through Newsletter, Word of Mouth, Local Radio Station, and Pamphlets at a cost of $500

Winslow's Assessment of Previous Plan's Mitigation Measures						
ID	**Name**	**Description**	• **Lead Agency** • **Proposed Cost** • **Proposed Comp Date**	**Status**	**Disposition**	**Explanation**
8.B.2	Establish new water supply points	Drill new wells or use surface water and develop a treatment plant	• Development Services □ $8,000,000 • June 2007	In progress	Keep	Water Dept is ongoing effort to establish new water supply points. So far, the Dept has completed a feasibility study
11.C.1	Criminal Justice Information Network	Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	• Public Safety □ $200,000 • June 2008	In progress	Keep	Air System will be completed by 2011 by Arizona State. No budget from Winslow. Total cost to date is $15,000 on Software Reporting Sharing Data System